PAINT and VARNISH Production

THE TECHNICAL MAGAZINE FOR MANUFACTURERS OF PAINT, VARNISH, LACQUER AND OTHER SYNTHETIC FINISHES

Newport

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A complete line of Gloss Oils. Palest and finest. None better.

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NEWPORT INDUSTRIES, INC.

230 PARK AVENUE NEW YORK 17, N. Y.

JULY
1954

Have you checked
the **STYRESOL**
picture lately?

To be perfectly frank, even we, in our "ivory tower" at White Plains, hadn't realized how our line of styrenated alkyds had grown until we had occasion to review our Styresol production recently. As you may recall, in these resins, RCI research chemists incorporated the styrene polymer with an alkyd to achieve the maximum in durability, adhesion, hardness, gloss, fast dry and color retention. RCI's Styresols possess excellent air-drying and baking properties — with results approaching lacquer type performance — and are highly resistant to gasoline, alkalis, acids and water. The Styresols listed below are heartily acclaimed by formulators of primers, implement enamels, toy enamels and industrial enamels (both air-drying and baking). Why not write us for samples?

RESIN NO.	N. V.	VOLATILE	VISCOSITY (GARDNER-HOLDT)	COLOR (GARDNER-1933)	ACID NO.
4240	44-46%	Toluol	Q-S	3—6	3—7
4250	49-51%	Xylol	S-U	2—5	4—8
4400	49-51%	Xylol	R-T	3—5	4—8
4430*	49-51%	VM&P Naphtha	X-Z	6—9	3—8
4440	49-51%	H.S. Mineral Spirits	Z_1-Z_3	6—9	3—8

*Specially developed for road marking paints where quick dry is a decided asset.

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Phenol
Glycerine
Phthalic Anhydride
Maleic Anhydride
Sodium Sulfate
Sodium Sulfite

EPON® RESIN does it!

WESTINGHOUSE Laundromat gets a tougher, more corrosion-resistant primer at much lower cost!

Laundromat has a baked Epon, flow-coated primer formulated by Pittsburgh Plate Glass Company. Film uniformity calls for only the briefest scuff sanding before application of the white enamel top-coat.

HERE'S HOW...

The protective finish on a washing machine is exposed to severe conditions during its service life. It must, for example, withstand abrasion, impact, attack from highly active alkalies and detergents.

Recently, Westinghouse engineers adopted a greatly improved finish for Laundromat components, using a new *primer* based on Epon resin. Applied by flow coating, the primer is only one-third the thickness of previously used primers. Tests have established a *three-fold* improvement in coating durability under severe conditions . . . and application costs have been materially reduced.

Laundromat components receiving the new Epon resin primer are: top, front, door, lower front panel, bracings, clamps and bottom pan. Some interior surfaces have *Epon primer as their only finish.*

Your Shell Chemical representative will gladly help you explore the advantages Epon resins can bring to your own formulations . . . superior adhesion; excellent resistance to abrasion and impact; resistance to heat, moisture and corrosive atmospheres. Write for SC: 52-31 "Epon Resins for Surface Coatings."

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RED LEAD PRIMERS

For Factory Fabrication on clean steel . . . Falkyd A3LV assures 4 hour dry

For Shop or Field Coat on prepared steel . . . Falkyd A-6, Falkyd TT-R-266-type III, and Falkolin Raw Linseed Oil are recommended

For a Field Primer Coat on partially prepared steel . . . Combinations of Falkolin Raw Linseed and Falkolin VO-S-70 kettled linseed are suggested

The structural steel framework of the new Greater Pittsburgh Airport pictured here is painted with a primer formulated with a Falkyd Resin and Falkolin Linseed Oil.

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PAINT and VARNISH Production

(REG. U.S. PATENT OFFICE)

Formerly PAINT and VARNISH PRODUCTION MANAGER
(Established in 1910 as The Paint and Varnish Record)

VOL. 44 JULY, 1954 NO. 7

NEXT ISSUE

"Pigmentation of Flat Wall Paints" will be featured in our August issue. This article deals with a laboratory study of determining the importance of pigmentation on flat paint quality. Among the more important problems covered in this study include: color uniformity over surfaces of varying porosity; streaking of flat paints; odorless vehicles and solvents in flat paints; effect of blend of titanium dioxide and titanium calcium pigmentation of flat paints; and effect of extenders on hiding power, brightness, and P.V.C. of flats.

c

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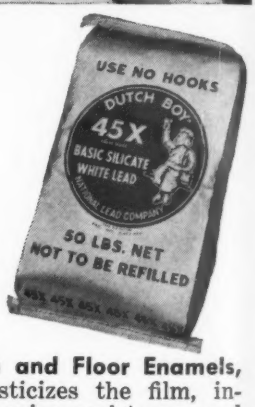
Bringing up the proof

that Dutch Boy Basic Silicate White Lead* **"45X"**

has what it takes to make foolproof exterior paints



When it comes to exterior paints, experienced paint makers are pretty likely to be "lead" men. In their book, there's no better way to insure foolproof formulation.

What type of "lead"?

Today, "Dutch Boy" Basic Silicate White Lead "45X" is the reigning favorite – because it's "lead" in its most economical form.

Exposure tests at National Lead's Sayville Test Station where tests of many different pigments have been conducted year after year, prove beyond question that "45X" has what it takes to make foolproof exterior paints.

And the fact that complaints drop way down when "45X" is used documents this proof most convincingly with paint makers!

Fewer complaints with "45X" because...

In white House Paints, "Dutch Boy" Basic Silicate White Lead "45X" improves self-cleaning properties.

In tinted House Paints, it increases film durability and resistance to color changes.

In Primers, it contributes greater adhesion, plus the water resistance to maintain the paint film's adhesive bond.

In Porch and Floor Enamels, "45X" plasticizes the film, increases abrasion resistance, and improves adhesion.

It's more economical, too. You use fewer pounds of "45X" than of other white lead types. That's because the reactive portion of each pigment particle is concentrated at the surface and, thus, proportionately larger amounts of "lead" are made available.

Make sure your exterior paints are foolproof. Use "Dutch Boy" Basic Silicate White Lead "45X" in your formulations.

National Lead Company: New York 6; Atlanta; Buffalo 3; Chicago 80; Cincinnati 3; Cleveland 13; Dallas 2; Philadelphia 25; Pittsburgh 12; St. Louis 1; San Francisco 10; Boston 6 (National Lead Co. of Mass.).

*Reg. U. S. Pat. Off.

Your Materials Laboratory

IN AN address entitled, "How to Set Up and Operate a Materials Department," before the Second Basic Material Conference in Chicago, Merritt A. Williamson, director of research of the Burroughs Corp., outlined the functions, duties and responsibilities of a firm's materials department.

Elaborating on ways and means to set up such a department, Mr. Williamson made this suggestion—

"Don't make an empire out of your materials department. Staff it with as few people as you possibly can, but try to make these as broad gage and as high caliber men as you can get and pay them what you have to in order to get them."

One of the most important departments of a paint manufacturing concern is without question the materials department whose primary function is to advise the manufacturing department on all aspects of raw materials. When one considers the many, many raw materials that are made available to the paint industry from time to time, the importance of such a department takes on added significance.

Management would do well to heed Mr. Williamson's remark to staff their raw materials laboratory with high grade personnel.

Unfortunately many have the impression that the only function of the materials laboratory is to sample and test all incoming materials. With such an attitude, management is therefore prone to hire only individuals whom he feels have a job requirement of making and reporting on some established tests.

There is more to it than this and we merely list the functions of materials laboratory as outlined by Mr. Williamson, which can be readily applied to the paint industry:

(1) Sampling and inspecting of all incoming material according to some established procedures. (2) Preparing the procedures for sampling and inspecting of incoming materials. (3) Specifying standard practices for the proper handling and processing of acceptable raw materials. (4) Acting as an advisor or having responsibility for plant troubleshooting. (5) Establishing intermediate and final inspection criteria and procedures for the materials components in products. (6) Preparing materials specifications for purchasing and keeping them up to date. (7) Accepting or rejecting materials that are out of specification as far as materials properties are concerned as opposed to tolerances on dimensions, or advising on their acceptance or rejection. (8) Assigning to engineering drawings specification numbers for the materials and also noting appropriate heat treatments and processing instructions. (9) Advising engineering or design departments on, or being responsible for, proper selection of material. (10) Advising engineering and design departments of materials properties. (11) Constant monitoring of literature for improved materials. (12) Sending for manufacturers' literature and requesting samples and special data. (13) Interviewing salesmen and stimulating suppliers to do additional test work. (14) Testing samples and making trial applications. (15) Publishing results of tests and data obtained both from company tests and from the supplier so that all concerned parties within the company may have ready access to it. (16) Doing research work in the development of specialized materials to meet certain needs of the company. (17) Encouragement and stimulation of other companies to apply their research talents to the solution of specific problems. (18) To make comparison tests to determine better products when your company is buying, and to supply purchasing department with a list of approved sources. (19) Advising on substitution of materials.

For proper execution of these functions, the progressive firm needs the services of a high caliber staff; and this will insure smooth production operation, lower operating costs, and high quality products.

there are
a great many
brown oxides!

but.. there are none as good as

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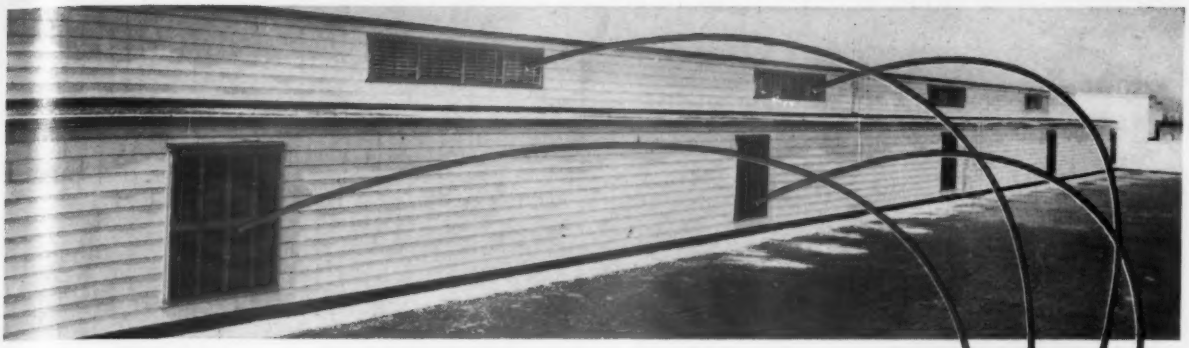
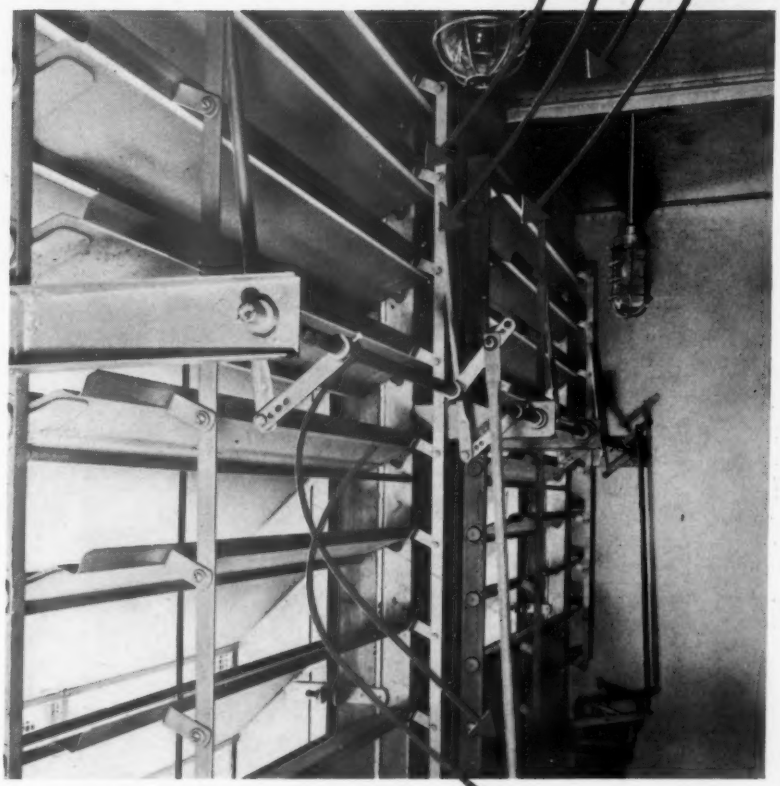


Sales-building performance HERE



Photos show air-conditioning apparatus house, and fresh air louvre units manufactured by The Bahnson Company, Winston-Salem, N. C. for textile mills. The whole window unit is exposed to the outside—to potentially corrosive industrial atmosphere, high humidity, and changeable weather and temperatures. For the vital protection necessary, the steel supporting framework, the fixed louvres and the dampers were thoroughly coated with finishes based on BAKELITE Vinyl Resins. Coatings were formulated and supplied by **Specialty Coatings Inc., Div. of Thompson & Co.,** Oakmont, Pa.

A job like this brings business to formulators. Corrosion is a top industrial problem . . . and coatings that can stop corrosion become top sales performers.

Dependability is the key . . . coatings that you and your customers know can be relied on every time. That's why BAKELITE Resins—phenolic, vinyl, styrene, polyethylene—offer you so much. You get the advantages of one-source purchasing for major synthetic resin requirements. You're never in doubt about quality. You have fine technical assistance available to help you build bigger business in the tremendous industrial coating market.

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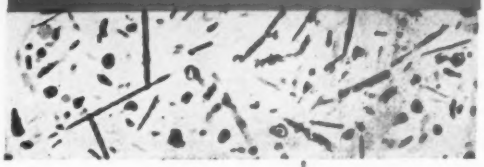
high

AZO ZZZ-22

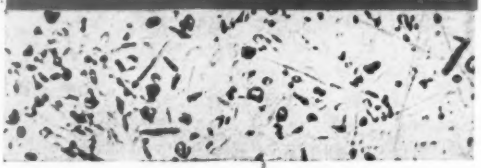
A high oil absorption Zinc Oxide having large Acicular Particles which gives heavy body



medium

AZO ZZZ-11

A medium oil absorption Acicular Zinc Oxide imparting exceptional weathering qualities to exterior paints

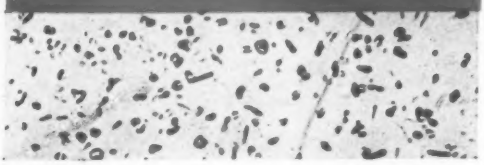


AZO acicular lead-free zinc oxide is a superior pigment available in a wide range of oil absorptions

low

AZO ZZZ-33

A definitely Acicular type with a lower oil absorption, but chemically identical with AZO ZZZ-11 and AZO ZZZ-22



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WHAT'S THE DIFFERENCE?

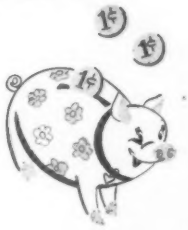
n-butyl acetate

vs.

isobutyl acetate

The only REAL DIFFERENCE to you

may be their COST



Are you cashing in on the savings that isobutyl acetate can bring you?

Many lacquer manufacturers are. In their lacquer thinner formulations, *n*-butyl acetate and other solvents are being successfully replaced in part or entirely with lower-priced isobutyl acetate.

For example, in the widely used federal specification thinner TT-T-266a, the use of isobutyl acetate has resulted in a 4% savings in material costs. The use of isobutyl acetate in this thinner and the resulting savings is typical of a number of formulations prepared and tested in our laboratories.

In many plants, deliveries of isobutyl acetate are being made directly into the tanks formerly used for *n*-butyl acetate. These companies are making an extra profit on every gallon of lacquer that leaves their plant.

Today, Eastman isobutyl acetate is finding wide acceptance as a lacquer solvent in its own right as well as a satisfactory replacement for *n*-butyl acetate. Its quality is uniformly high. Its price is low and stable.

For detailed information on how this Eastman solvent can reward formulators interested in exploring new ways to cut costs, write to Eastman Chemical Products, Inc., Chemicals Division, Kingsport, Tennessee.

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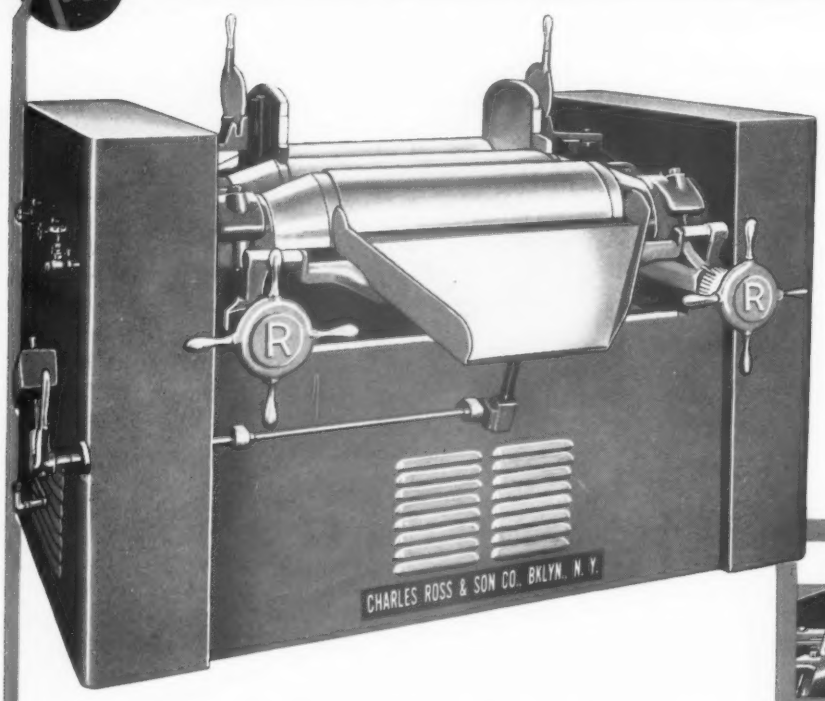
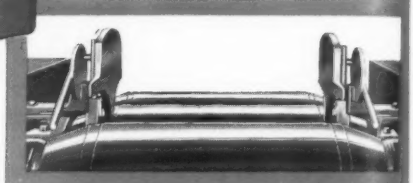
FOR GREATER PRODUCTION AND LOWER OPERATING COSTS



The latest Ross #52TC 14" x 32" High Speed Three Roll Mills are precision engineered and designed for the greatest possible production of high quality dispersions. They will out-perform all other mills of comparable sizes.



The #52TC—14" x 32" Mill, like all Ross Mills, is readily CONVERTIBLE for operation either with fixed center roll and four point adjustment or for operation with floating center roll and two point adjustment. To convert from one type operation to the other is easily done within minutes by any operator, without special kits or tools.

LARGER roll area than any comparative size mill for greater production.

VERSATILE to permit perfect adjustment of rolls, apron, and other parts to meet the various milling requirements of different materials.

RUGGED in construction for dependable trouble-free operation.

Why Ross Mills are preferred by leading plants throughout the country

1. **FRAME** of extra heavy cast iron for rigidity and perfect roll alignment.
2. **ROLLS** of highest quality with extra hard chilled surface, uniform chill depth, and chamber bored for full length cooling. Special high ratio of differential speeds gives greater shear and larger production.
3. **GEARS** extra heavy with wide face helical cut for smooth quiet operation.
4. **BEARINGS** heavy duty SKF self-aligning roller bearings. They carry about one-half their rated load capacity, are tested and guaranteed for all operating conditions.
5. **MOTOR** mounted in Mill frame and lubricated from outside of Mill. Two speed motor when required.
6. **DRIVE** heavy silent chain drive in continuous oil bath lubrication. Chain tension adjustable for efficient power transmission and quiet operation.
7. **APRON** can be raised or lowered to most efficient take-off position for light or heavy materials. Specially balanced for uniform pressure of razor knife on front roll. Constant pressure is maintained as knife wears providing continuous thorough take-off of material for maximum production.
8. **ADJUSTMENT** facilitated by thrust bearings in handwheels for rapid setting or disengaging of rolls. Improved large calibrated indicating dials assure sensitive accurate roll adjustment. With corresponding dial readings, parallelism of roll faces is positively controlled. Setting is direct, has no intermediate wearable parts, will not lose effectiveness or accuracy.
9. **END PLATES** quickly raised for cleaning by lever operated lifting devices. They are securely locked in both cleaning and operating positions. End plates ride on tapered roll ends, off production face of rolls, allow use of full 32" production face of rolls for greater output. Large fixed hopper with detachable side pieces furnished when preferred.

Mills available in 4½ x 10, 6 x 14, 9 x 24, 12 x 30, 14 x 32 and 16 x 40 inch sizes. Write for further details!

Information on our *guaranteed reconditioning service* for mills of all types on request.

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Manufacturers of Mixing and Grinding Machinery Since 1869

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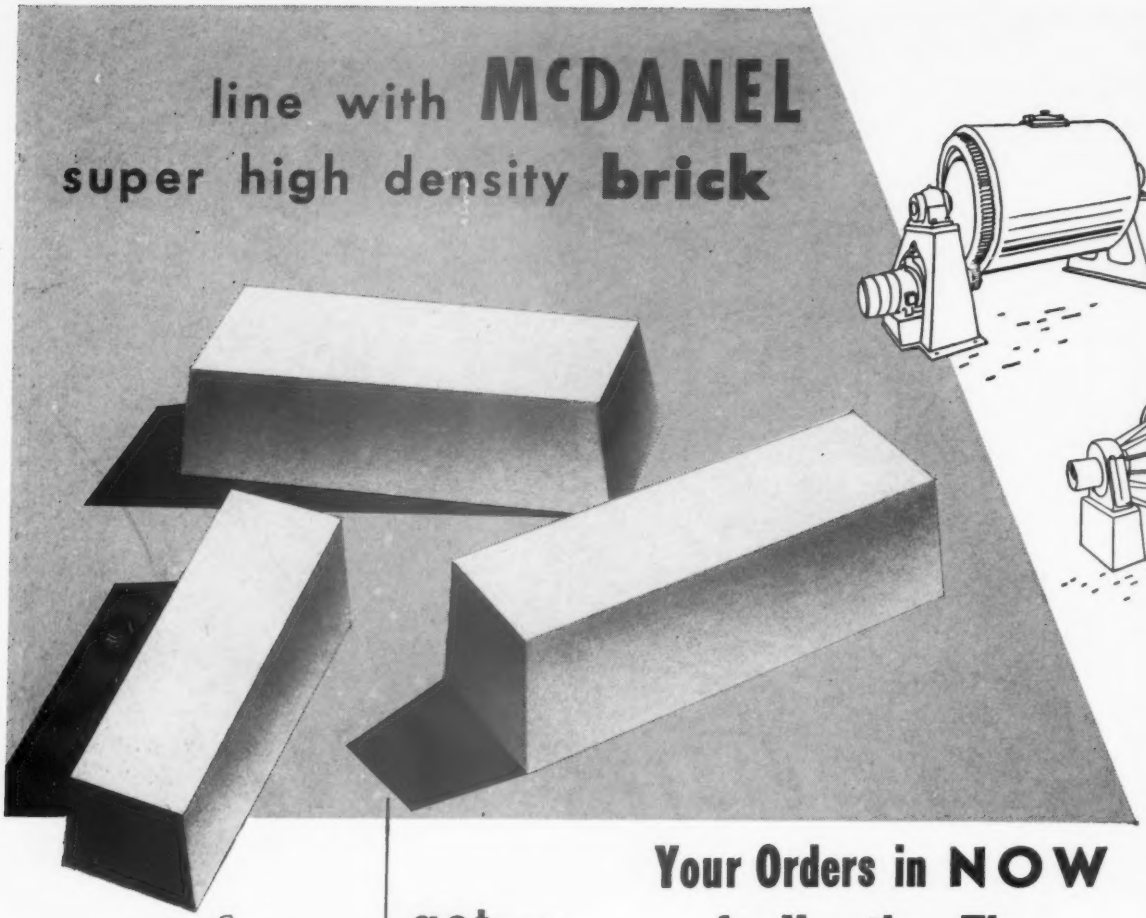

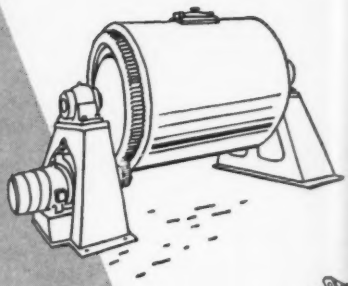

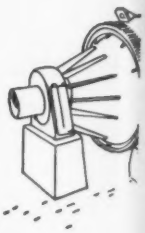

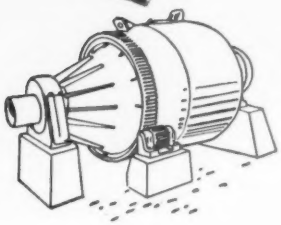

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HAND ROLLED GRINDING BALLS
•
MILL HEAD ASSEMBLIES
•
METAL COVERED GRINDING JARS & MILLS
•
TANK & DRYER LININGS

Write for the McDanel Porcelain Products Catalog

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BEAVER FALLS, PENNA.

Equip your mills with McDanel's patented Mill Head Assembly — avoid contamination and be assured of uniformity of batch.

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standard grind

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A glance at the panels above will show you the obvious difference between results you can expect from Standard Grind pigments vs. the new VVF colors developed by Williams. The VVF pigments will reduce your grinding and dispersing time in paints and allied products as much as 75%. You'll get brighter mass color, stronger tint, increased hiding power, and higher gloss as illustrated by the table below. VVF pigments are available in Raw and Burnt Siennas, Raw and Burnt Umbers, Metallic Browns (shown on this page), Red Iron Oxide and Primer Pigments. Your Williams representative will gladly give you complete information on this new pigment group—or write us direct today for your copy of the illustrated VVF Tech Report.

Standard Metallic Brown		VVF Metallic Brown
100	Tinting Strength	200
100	Dispersed Strength	275
405	Hiding Sq. Ft./Lb.	670
27	Gloss %	60
75:25	Grinding Ratio	75:25
3.50	Hegman Fineness	6.50

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"OUR 76th YEAR"

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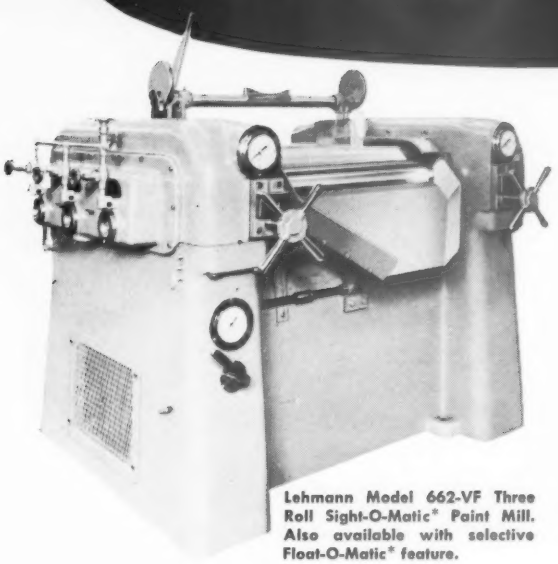

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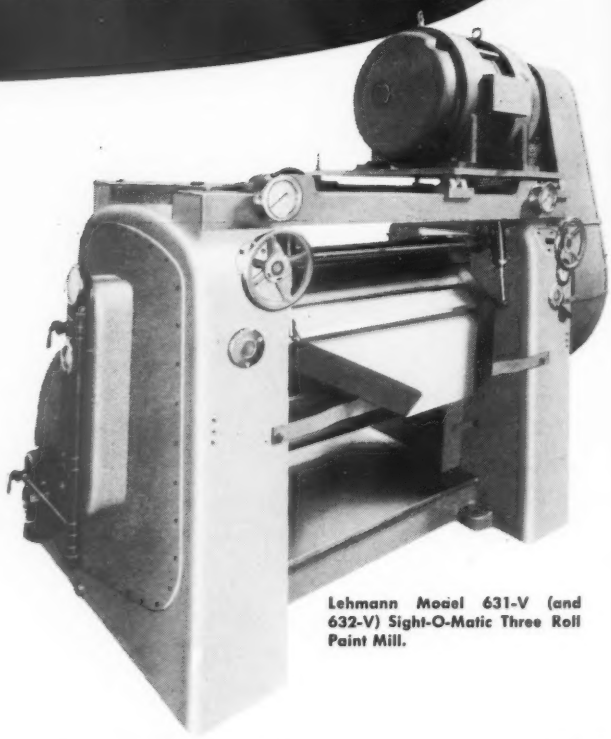

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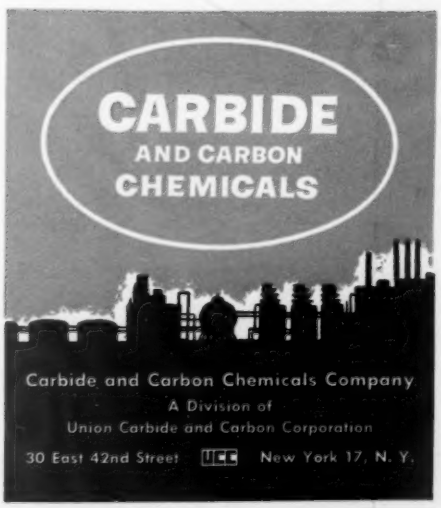

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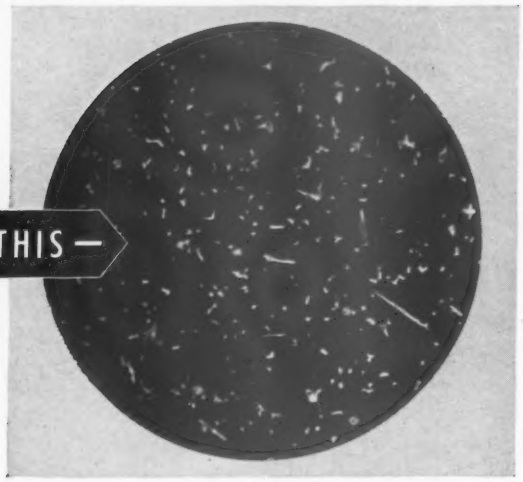
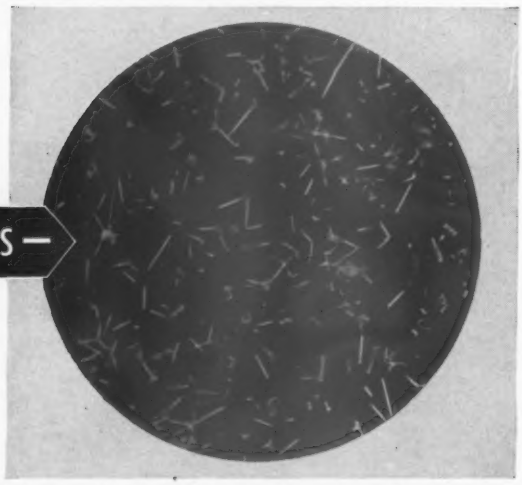


Microscopic view of zinc oxide showing high degree of nodularity, low acicularity



Microscopic view of zinc oxide particles showing high degree of acicularity

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GAS HEAT TREATMENT OF OILS AND RESINS

By LEO WALTER
Consulting Engineer

IN THIS article, an outline of the heat treatment necessary to produce the desired properties in the materials used in the manufacture of paints and varnishes is given, and the types of burner used are described, together with a number of installations and appliances in which heating is carried out by towns gas, as available in England. The wider availability of natural gas in America and Canada should draw the attention of paint manufacturers to greater use of gas as the heating medium. As is well-known, a great variety of oils, resins, and gums are used in the manufacture of paints and varnishes, but for the purpose of heat treatment they may be classed as drying oils, non-drying oils, and fossil resins.

Temperature Requirements

In general it is necessary to raise the oil or resin to a specified temperature and to maintain this within fairly close limits for a period, the duration of which depends on the materials under treatment for "bodying". Temperatures required for the various types of oils and resins are given in Table I.

In addition, it is essential, for the success of these processes that the rate of heating to the required temperature shall be under strict control. A high standard of uniformity between batches of treated oils or resins is now demanded by the industry, since it is no longer considered good practice to blend several underheated and overheated batches in order to secure the required viscosity and other properties of the final product. In selecting a suitable fuel it is necessary that flexibility in control, continuity in supply, cleanliness, speed, and simplicity in operation, as well as convenience in handling, shall be assured. Town gas is a fuel which fulfils all of these requirements. When considering the cost of fuel and equipment it should be borne in mind that these represent but a small proportion of the overall cost of the product, and that the results must be assessed in terms of the quality and value of the product and not merely upon the basis of the relative cost of competitive fuels and equipment.

Oil Heating

Except for small experimental units, it is customary to install air blast burner equipment of the air-gas proportioning type, utilizing gas at ordinary pressure, and air from a fan throwing a pressure of approximately ½ p.s.i. In the general type of furnace it is not possible to observe the flame after the pot is placed in position, and the great value of proportioning equipment is that the air-gas ratio can be pre-set and all the required turn-down conditions satisfied by operating the air valve only. The correct setting of the air valve is obtained by observing the pressure indicated on a gauge installed in the air-gas mixture supply pipe.

Processing temperatures of some oils and gums.

Table I

Linseed Oil	572°F
Wood Oil	536
Castor Oil	536
Hard Congo Gums	700-750
Soft Congo Gums	650
Manila Gum	554-572

Gum Running

In the melting of resins, two types of air-blast burner are used, known as the single tunnel and the multi-nozzle burner. Figure. 1

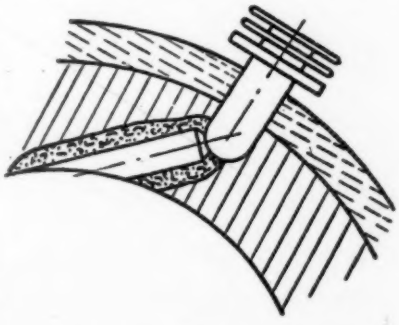

Figure 1. Tunnel burner design.

is a drawing of a setting employing a tunnel burner in which the burner fires tangentially on to a hard refractory lined pit beneath the pot; heat is transferred largely by radiation from the incandescent surface to the bottom of the pot. A drawing of a multi-nozzle burner is shown in Fig. 2 and with this type of burner a high concentration of heat is applied to the

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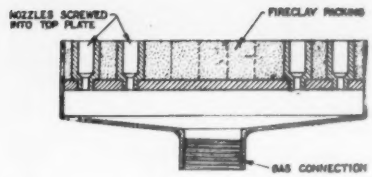
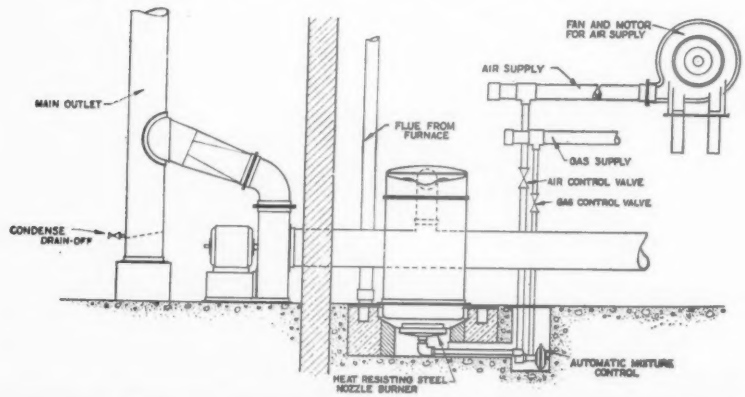


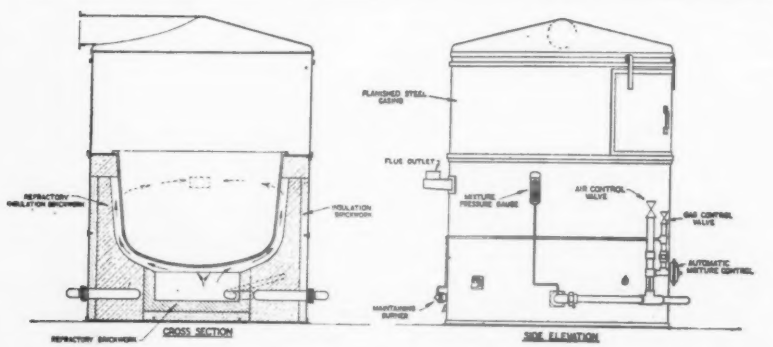
Figure 2. Sectional view of nozzle burner made from heat resistant steel.

bottom of the pot. A number of firms use this type of burner for running gum prior to adding the oil. Experience has shown that a reasonable pot life is obtained if precautions are taken to prevent overheating due to the accumulation in the bottom of the pot of the foreign matter which is sometimes present in certain gums and resins; where this trouble is likely to occur; overheating can be avoided by vigorous stirring. It is because of the risk of overheating with multi-nozzle burners that there is a general preference for tunnel burners which, in addition to their being more adaptable, are not likely to lead to spot heating. Maintenance costs for the tunnel burner system are in general lower than is the case with the multi-nozzle arrangement.

In both systems the pot is usually allowed to enter the heating zone for a depth of only 6" which limits the available heating surface. The reason for the shallow immersion depth is that heated oil has to be added to the resins after these have been melted and raised to the required temperature. The bodying process is then continued until the correct conditions are obtained. The pot is then removed from the furnace on a special carriage and taken out of the varnish kitchen; white spirit, naphtha, etc., are added, and the contents allowed to cool to room temperature. During the heating up process, the pot is connected to a fume removal plant and the temperature is very carefully observed especially when it approaches the flashpoint. It is essential that the sides of the pot above the level of the liquid remain below the flashpoint of the vapor; it is for this reason that the pots are never insulated. In consequence of these heat losses, the furnace must be so designed that the heat shall be transferred to the pot efficiently over the somewhat limited area available for this purpose. Fig. 3 is a sectional drawing of a multi-burner furnace for gum running in which the shallow immersion of the pot and the uninsulated sides are shown.

Figure 3 (above). Multi-burner furnace for gum treatment using nozzle burners. Fig. 4 (below). Oil boiling furnace using gas tunnel burner.





Drying Oils

In the process of oil boiling for the production of stand oils, it is possible to drop the pot completely into the setting, and in consequence much higher efficiencies are obtained. The pans can be of cast iron with vitreous enamelled interiors, "Staybrite"* steel, aluminum, or copper. Heating is by tunnel burners directed tangentially into a refractory lined pit at the base of the pot, the hot gases passing up the space between the pot and the furnace walls, and away to the flue outlet arranged below the pot flange. Fig. 4 is a drawing of an oil boiling furnace, and Fig. 5 shows an installation

Figure 5. Installation of 2 drying furnaces.

of two such furnaces. The burner chamber is lined with a high temperature refractory brick, the remainder of the furnace casing being lined with refractory insulating brick having a low thermal capacity. Heat transfer is largely by radiation from the brickwork. When the desired temperature of the oil is reached, the air blast burners are turned out, and the temperature is held by a low pressure burner for the required period.

*"Staybrite" steel is equivalent to Stainless steel.

Two tests which are of considerable interest, were made on the plant shown in Fig. 5. In the first process, linseed oil had to be raised from 80°F to 535°F and held at 535°F for approximately 6 hours, whereas for the second process the temperature was raised to 512°F and this maintained for 22 hours. The pot used in each case had a nominal capacity of 500 gallons and was made of "Staybrite" steel.

1st Process. Gas required to raise 350 gallons linseed oil from 80°F to 535°F in 2 hours 40 mins. 3.760 cu. ft. (18.8therms).

Gas required to maintain at 535°F for 6 hours; 720 cu. ft. (3.6 therms). Total. 4,480 cu. ft. (22.4 therms).

2nd. Process — Gas required to raise 386 gallons linseed oil from 60°F to 512°F in three hours; 3700 cu. ft. (18.5 therms).

Gas required to maintain at 512°F for 22 hours; 2,940 cu. ft. (14.7 therms). Total. 6,640 cu. ft. (33.2 therms).

It is usual for makers to quote nominal capacities, but of course the actual capacity depends on the final temperature of the oil. In the second process, the oil levels in the pots were noted at various temperatures during the trials. The levels are given in Table II.

Table II

Temperature of Oil °F.	Height of Oil below Brim of Pan inches
60	11¾
200	10¼
300	9
400	7¾
500	6¼

Non-Drying Oils

Fig. 6 is a drawing of a typical plant for the dehydration of castor oil. Usually, the viscosity of castor oil prior to heat treatment is fairly high, but during the process, it falls until a minimum value is reached and as the polymerization of the unsaturated hydrocarbons occurs, it increases again. The pot shown in Fig. 6 holds 2½ tons of raw castor oil, which is raised to a temperature of 550°F in approximately 5 hours. The product is held under vacuum at this temperature for some 12 hours, the actual time depending upon the required final viscosity; and the temperature at which the vacuum is applied is dependent on the moisture content of the oil.

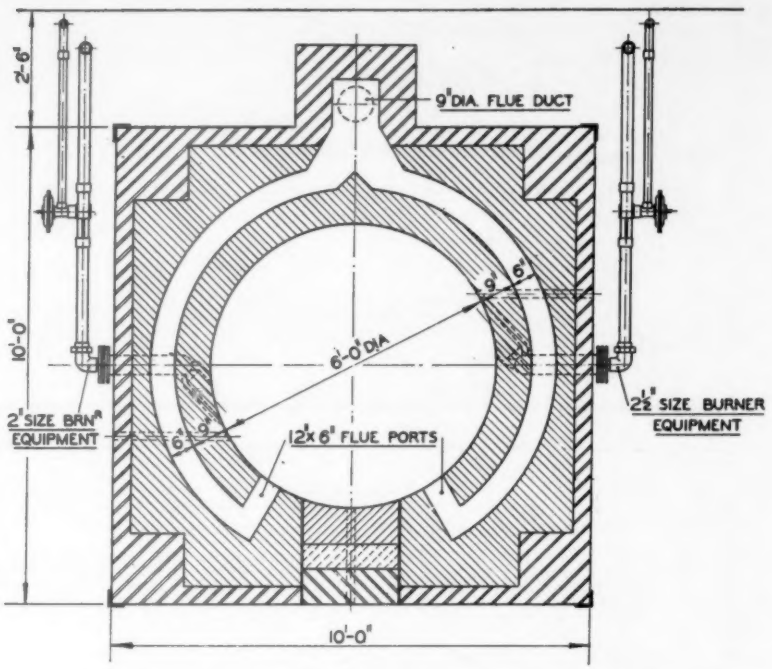


Figure 6. Specification drawing of dehydration processing kettle for polymerization.

Equipment for Varnish Making

Fig. 7 is a plant for varnish making. On the left hand side is the gum running kettle, and on the right, the furnace for oil heating. The oil, which is to be added to the run gum is heated to a temperature of 325-350°F before being added to the gum. The waste gases from the gum kettle are used to preheat the oil, but this heating is supplemented by a small air blast burner shown at the base of the oil heating section.

Fig. 8 is a drawing of the gum kettle. The maximum charge for this kettle is one ton, although it is possible to fuse as little as three quarters of a ton. The approximate time to fuse 1 ton is 4½ to 5 hours. After the gum

Figure 7. Gas-fired plant for varnish manufacture.

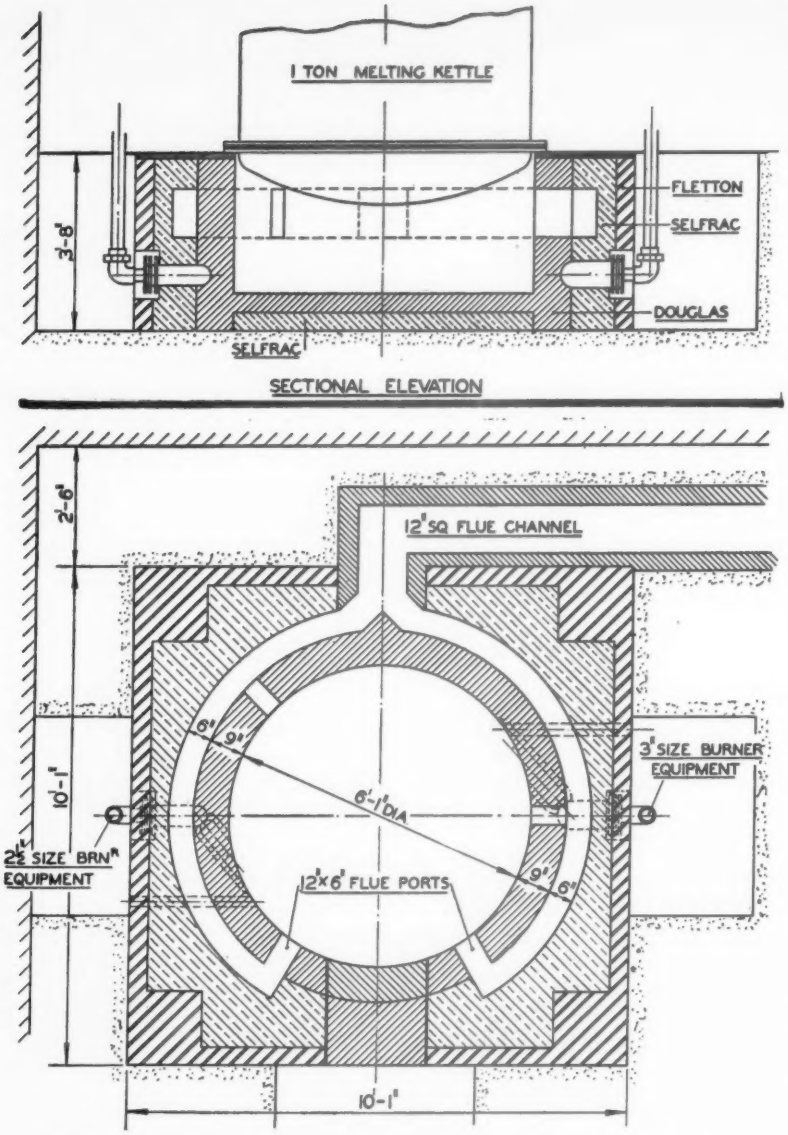


Figure 8 (above). Sectional elevation of gum running furnace with gas burners.
Figure 8A (below). The sectional view of a copal gum running furnace.

is fused, oil is added from the oil kettle. This process known as "oiling" usually takes about 3 hours, the actual time depending upon the type of varnish being made and the amount of bodying required.

The gas required for running 1 ton of gum with approximately two tons of oil added and bodied was 14,290 cu. ft. (71.4-therms). About 1,100 gallons of varnish are obtained when this product is suitably thinned.

Plant for Making Black Varnish

Fig. 9 shows a plant for making black varnish. Black varnish is usually made by heating and bodying the oils first, and then adding pitch or asphalt slowly to the treated oil. When this has been done, driers of various types are added as with clear varnish, and the product is thinned to standard viscosity. The charge for the plant shown in the photograph is 2 tons, and the yield is approximately 1,700 gallons of varnish. The gas used for producing a batch of 1,700 gallons is about 16,400 cu. ft. (82 therms). It should be mentioned that although the gas consumption for producing varnish in the plant just described is roughly the same as for a similar quantity made in a series of small pots the labor costs are only about a third. Moreover, when this plant is used for the production of clear varnish the product is considerably clearer than is the case when small pots are used for treating the same ingredients.

Immersion Heating

Some years ago the London Gas Light and Coke Company (now incorporated in the North Thames Gas Board) was approached by one of its customers for advice on the heating of a charge of 16 cwt. of oil to 570°F in approximately 1 hour, but it was stipulated that no brickwork was to be used since it is essential to the success of the process that the batch be cooled immediately in order to obtain the required viscosity. Kestner plant heated by thermostatically controlled electric immersion heaters had been used and good results obtained. Synthetic materials are used in the particular process and if these are not cooled immediately, the required viscosity is not obtained, "gelling" results. It is estimated that a gas rate of approximately 2,500 cu. ft. (12.5 therms) per hour would be required with the normal type of brick setting to satisfy the time requirement, and it will be appreciated that a gas rate of this order without some form of surrounding heat insulation would not be an efficient proposition. A further requirement was that

Figure 9. Gas-fired pot pit type furnace for black paint.

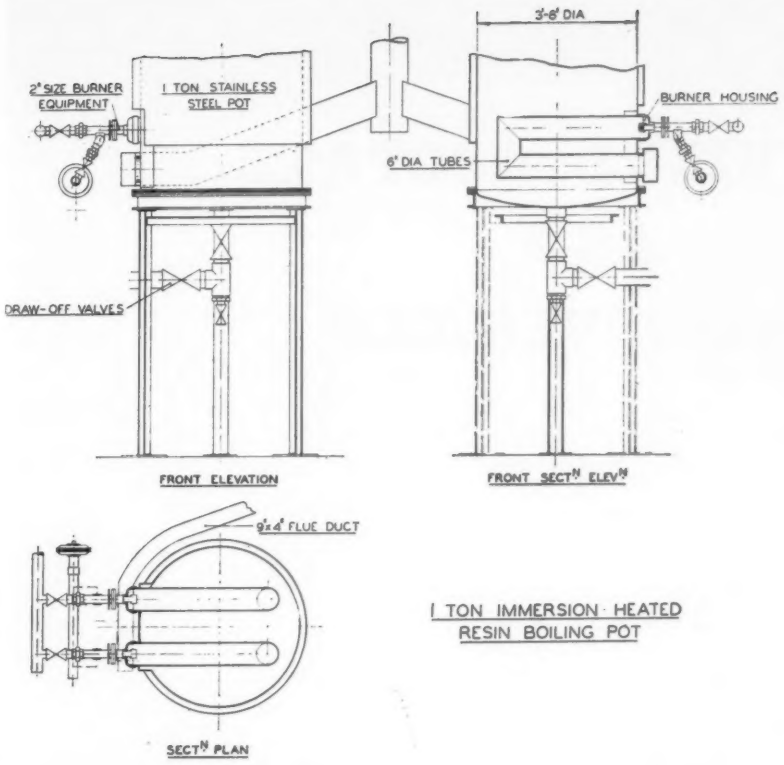


Figure 10. Specification drawings of immersion heated resin boiling kettle.

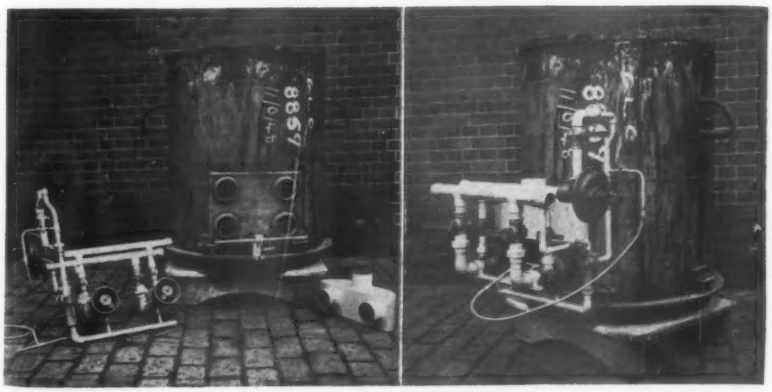


Figure 11 (left). Kettle and burner assembly before installation; Figure 12 (right) installed.

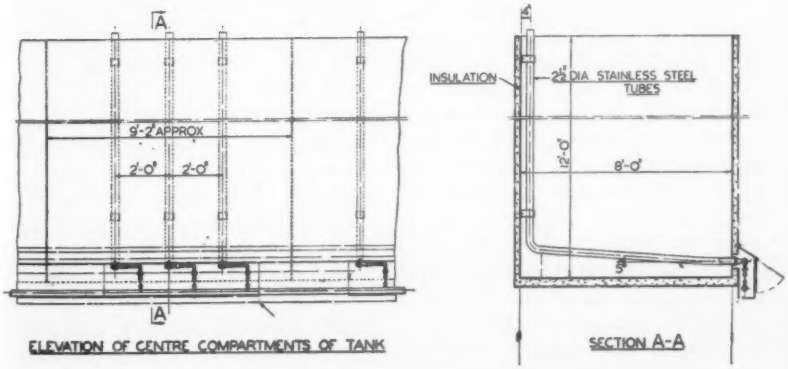


Figure 13. Proposed connection of immersion heating tubes to oil storage tanks.

the pot should be mounted at a suitable distance from the floor to enable the finished material to be drained from the pot into drums. It was, therefore, necessary to design the pots for tubular immersion heating, and two pots with completely automatic control including Protectoglo flame failure equipment with spark ignition, have been built.

Fig. 10 is a drawing of this plant in which the burners fire into the immersion tubes at a high level and the products of combustion are discharged at a lower level into a flue duct. It was necessary in this installation to employ this method of firing which with air blasts burners gave satisfactory results, but had low pressure burners been installed it is unlikely that this arrangement would have been successful. High velocity burners were used with low pressure gas and air at 1 p.s.i. The burner heads are of "Tungum" heat resisting bronze drilled with the requisite number and size of holes to suit the inspirator throat size. In order to obtain quick cooling the pots were made with a 2" jacket for water cooling.

Another firm expressed interest in this method and as a pot was out of action at the time, two sets of tubes were fitted in order that the firm might gain experience with the system. Fig. 11 shows the pot ready to receive the burners which are seen on the left-hand side of the photograph. Fig. 12 shows the plant with the burners assembled in position. The burners were of similar design to those in Fig. 10.

A number of charges of raw linseed oil were treated. The weight of oil treated in each test was 960 lb. The average time to heat each batch to 580°F was 3 hours, and the gas consumption was 940 cu. ft. (4.7 therms). The original furnace which were of the pit already described consumed 400 cu. ft. (2 therms of gas per hour) and these took approximately 4 hours for that same operation. It is apparent the the immersion system has great possibilities for certain processes, especially as brick settings can be dispensed with and the pots erected on a suitable staging so that

(Turn to page 66)

POLYVINYL ACETATE AS A PAINT VEHICLE

By
R. J. DAVIS
Celanese Corp.

ALTHOUGH the first U. S. patent on an emulsion paint was taken out in 1865, it has only been since the end of World War II that emulsion paints have achieved a significant place in the American paint industry. During the past five years, so called "latex paints" for interiors have developed at a phenomenal rate. In 1953 between 40 and 50 million gallons were sold, mostly of the butadiene styrene type.

Polyvinyl acetate as a paint resin has only recently become of interest to U. S. paint producers, but paints made from this resin have been widely used in Europe for the past 12-15 years. The wider availability and greatly reduced price of vinyl acetate monomer probably has been a big factor in renewed U. S. interest in polyvinyl acetate for paint use.

Current advances in emulsion technology have made available to the paint formulator improved emulsions which together with new knowledge in formulation of these emulsions now make it possible to produce paints which bid fair to capture a sizable part of the interior and exterior paint market.

Polymerization of Vinyl Acetate

The polymerization of vinyl acetate may be carried out by heating monomeric vinyl acetate with a suitable catalyst or by exposure to ultra violet light. The reaction is so highly exothermic that the polymerization cannot be controlled unless a diluent is used. Either organic solvents and water may be used. Solvent systems are termed solution polymerizations while water systems are described as emulsion polymerizations.

Emulsion polymerization may be carried out in several different ways depending on the desired polymer characteristics. The simplest system is the batch process in which all ingredients are charged into the kettle initially. This process presents problems in providing adequate heat transfer required to control the reaction temperatures. Relatively large resin particles, 2-3 microns, are obtained by this method.

To obtain smaller particle sizes and to alleviate excessive exothermic effects, the delayed addition technique may be used. In this process, only a portion of the monomer is charged initially and after polymerization starts, the balance of monomer is added to the kettle either incrementally or continuously throughout the run.

A variation of emulsion polymerization is suspension or pearl polymerization which differs from emulsion polymerization primarily in the amount of protective colloid or suspending agent used. Polymer beads or "pearls" are produced by this technique.

A polyvinyl acetate emulsion system essentially is composed of water, monomer, surface active agent, protective colloid, and catalyst. In addition buffers, and inhibitors to terminate the reaction if necessary, may be used.

Protective colloids serve to coat the individual resin particles to prevent agglomeration. Water soluble cellulose derivates, natural gums, or polyvinyl alcohol are the most commonly used colloids.

Surface active agents are needed to keep the particles suspended and to reduce the interfacial tension between water and monomer. For vinyl acetate, non-ionic and anionic types may be used but they must be stable in acid media because the polymerization is conducted at a pH range of 4 to 6.0

Catalysts most commonly used are the peroxides and persulfates and may be either oil or water soluble types.

Emulsion polymerization of vinyl acetate is normally carried out under atmospheric conditions in a stainless steel or glass lined jacketed kettle equipped with a high speed agitator and a reflux condenser. Because of the low flash point of the monomer (-5°C) an explosion proof work area is required and all lines and equipment should be grounded at all

This paper was presented before the Vehicle Manufacturers' Group of the New York Paint, Varnish and Lacquer Assoc. at May 12, 1954 meeting.

times. Monomer may be stored in plain steel tanks but finished emulsion, because of its acidic nature, must be stored in stainless steel or lined tanks.

The reaction generally requires 4 to 6 hours and is run at temperatures ranging from 65 to 90°C. Conversion is usually over 98%. For paint use emulsions should have less than .5% free monomer to avoid odor and paint stability problems. Excessive free monomer also softens the dried resin film.

Properties of Polyvinyl Acetate

Polyvinyl acetate emulsions dry by the evaporation of water. The individual resin particles then coalesce to form a continuous film.

The resin itself is clear, colorless, odorless, non-toxic, chemically inert to ultra violet light and oxidation, greaseproof, and mildew proof. Further, the resin possesses excellent adhesive properties and films are permeable to water vapor. This last property is of particular interest in connection with paint because a "breathing" paint film will not blister due to build up of water vapor pressure behind the paint film.

Polyvinyl acetate films are relatively water resistant, the degree of water resistance being determined to a great extent by the composition of the emulsion system. Emulsions can be made whose dry films will withstand many thousands of strokes on a scrubability test. These films develop maximum water resistance within a few days compared to weeks for the oxidizing type polymer films.

Unmodified polyvinyl acetate forms films which are too hard and brittle. Furthermore, these films form at temperatures that are too high for practical purposes. It is necessary therefore to add plasticizers of one type or another to obtain softer more flexible films and to promote film formation at lower temperatures. Conventional plasticizers such as dibutyl phthalate and tricresyl phosphate have been used successfully. Non-migrating resinous plasticizers have received considerable attention since film failure frequently results from plasticizer migration.

Another approach to this problem is internal plasticization by copolymerizing vinyl acetate with other monomers.

Properties of PVA Paints

Properly formulated polyvinyl acetate paints have the following advantages:

1. Excellent light stability and aging
2. Low odor
3. Fast drying
4. Excellent adhesion to fresh plaster, concrete, wood, and other surfaces
5. Excellent resistance to fat and oil
6. Good alkali resistance
7. Good washability
8. Non-blistering
9. Ease of application and clean up

Polyvinyl acetate paints are now being sold for primer sealers, interior flat, and exterior masonry. The alkali and grease resistance, and water vapor permeability of these paints make them particularly advantageous for primer sealers.

For exterior wood surfaces these paints hold considerable promise based on exposure tests now under way and on European experience. In this connection a recent report from Germany summarized seven years of exposure on wooden railroad cars. A polyvinyl acetate primer and top coat system withstood seven years of intense weathering with little deterioration of the film itself or the color of the paint. The adhesion of the paint films to each other and to the wood was still very good. The report concludes that the results have hitherto not been obtained with other materials.

Paint Formulation

While the selection of resin emulsion has an important bearing on the quality of finished paint, it has been our experience that the formulation of the paint is perhaps more important. Good quality paints can be made from emulsions which vary considerably in particle size and water sensitivity. The evidence seems to point however to emulsions having fine particles and low water sensitivity.

The binder system consists of resin and plasticizer. Modification with compatible alkyd resins improves the scrub resistance, the freeze-thaw stability, and helps promote pigment wetting.

Pigments and colors should be alkali resistant and contain a minimum of water soluble matter. Most of the pigments used in butadiene systems are satisfactory. Deep tone colors and tinting colors must be carefully selected and prepared if flooding and streaking and shade variations are to be avoided. Streaking may be defined as the formation of deeply colored lines on brushing, while flooding involves an increase or change in color shade throughout the paint film. Streaking is an indication of incomplete dispersion of color while flooding appears to result from incomplete defloculation of color which is uniformly dispersed. Both phenomena are physical in nature and can be overcome by the use of wetting agents and better pigment dispersion techniques.

Shade variations may arise from defloculation of white pigment on aging, preferential absorption of color by the resin, or from chemical attack of colors by components of the emulsion or paint system.

Solvents such as the glycols and glycol ethers are suggested to help in film formation, especially at lower temperatures and in this sense may be considered as temporary plasticizers. Freeze-thaw stability is improved by the use of these solvents.

Other ingredients essential to a well balanced paint are thickeners, wetting agents, pigments dispersants, mold inhibitors, and anti foams. Failure to provide good antifoam properties in the finished paint may lead to cratering and pinholes in the dried paint film due to entrapped air.

Polyvinyl acetate paints are generally slightly on the acid side and therefore a suitable container must be used to assure good shelf life.

AUTOMATIC OPERATIONS FEATURED AT SCHAEFER VARNISH PLANT

IN RECENT months, The Schaefer Varnish Company of Louisville Ky. has focused their attention on streamlining their facilities for better control and more automatic and efficient operation. This meant changes and re-arrangements of present equipment and the incorportation of new equipment and methods.

The entire lacquer manufacturing plant was moved to a larger, more fire-proof area. Modern mixing equipment and pumps were recently installed for cutting, thinning, blending, and pumping of high solids base solutions. Faster and more efficient filters were also installed, resulting in both increased capacity and a more uniform finished product.

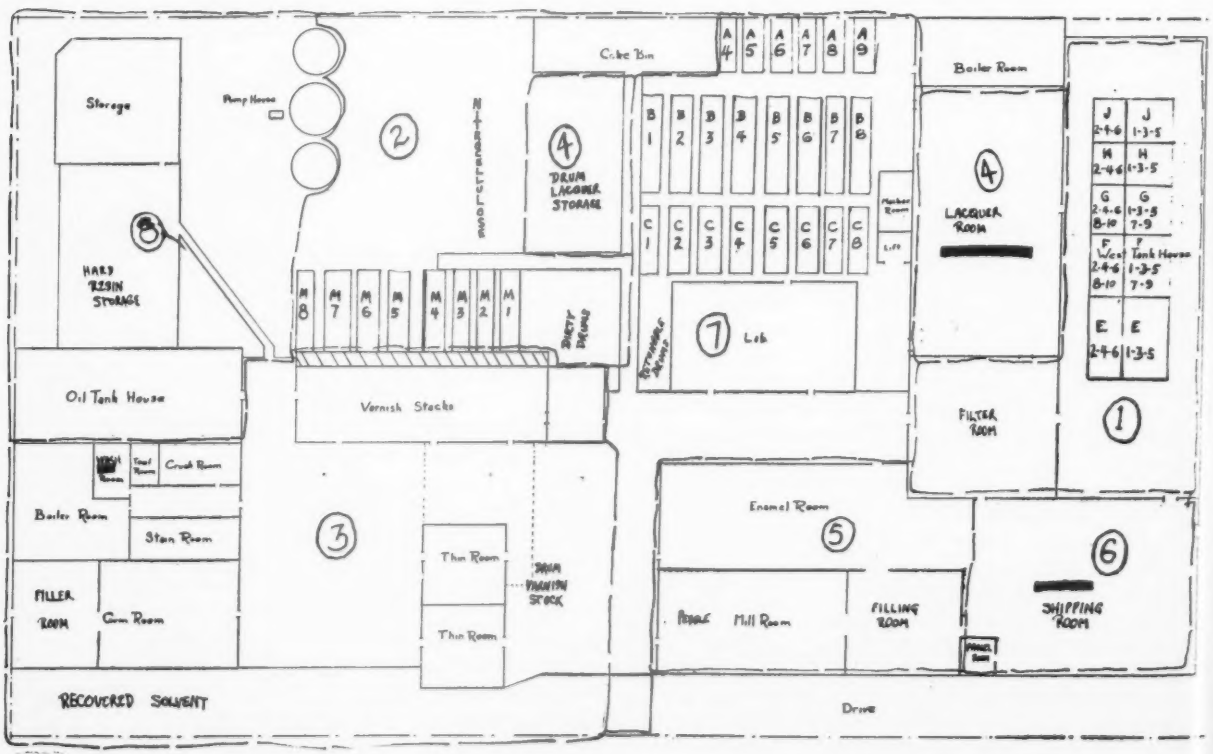
In order to attain efficient thinning operations, tanks of larger capacity were employed in the enamel, varnish and stain departments. These tanks were installed either underground or overhead, thereby saving valuable floor space.

Much of the basic equipment used in the manufacturing operations needed only re-arrangement or refinement to bring them up to an efficient performance level. For example, water cooled steel ball mills were equipped with automatic thermostatically controlled water valves. These valves not only maintain a constant mill temperature but also cut down on the cooling water requirements. Also, high density ceramic balls replaced pebbles in porcelain mills, and in-line filters were installed to maintain high quality and performance. Where pumps were fixed, portable installations were made and these units are moved from place to place as required.

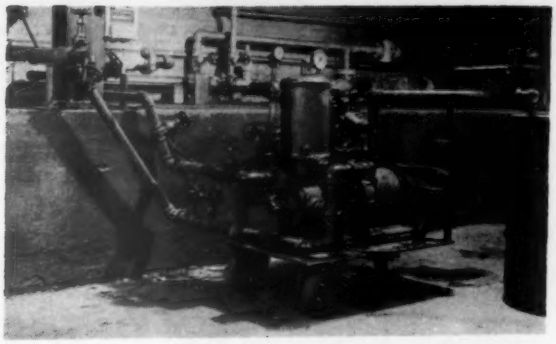
Wherever hand operations were used in loading and unloading operations, these were replaced, where possible, with mechanical hoists and lifts.

Warehousing was blueprinted with a mind toward consolidating materials in marked areas near the point of use, thereby holding handling time to a minimum. In general, The Schaefer Varnish Company feels that surface coatings can be manufactured on the same flow-sheet basis as are many other types of products, whether the batch size be small or large.

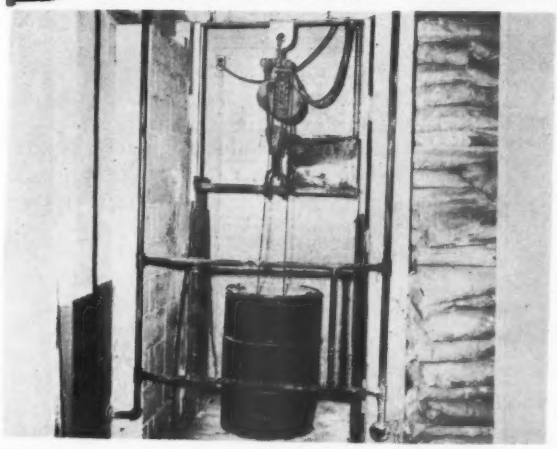
Diagram of stock location are placed at various places throughout the plant for ready reference.



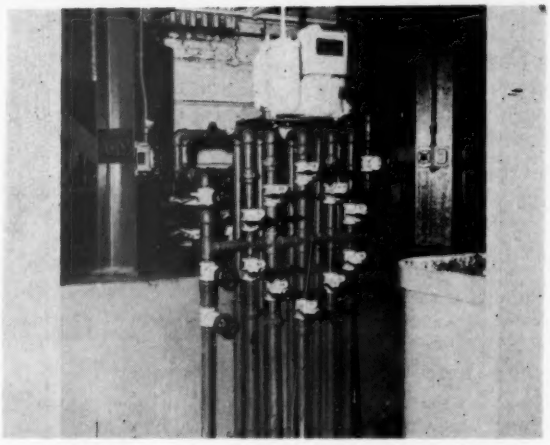
Exterior and interior warehousing areas are sectioned into areas and bays. Here, material 0-42 is located in Area M, Bay 7. Charts are located at strategic points around plant for ready reference.



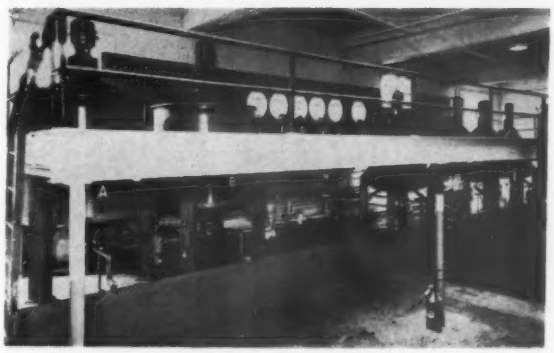
All lacquers, varnishes and enamels are filtered. This unit can be used as a pump or a filter by means of valve selection. Several are in use, and being portable can be moved from place to place as needed.



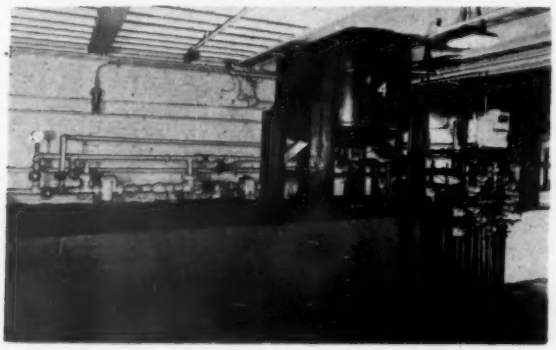
This lift, as shown, is constructed on an iron frame using an electric chain hoist as a drive. Unit raises raw materials from floor level to mezzanine for loading mixers and pebble mills.



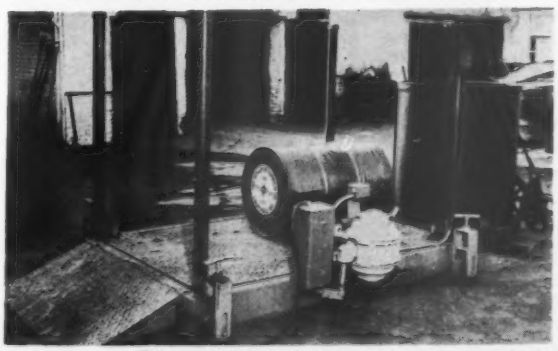
Solvents and thinners from tank storage are piped to the "Christmas Tree" for selection and distribution to the proper mixer or tank, after having been measured through the in-line meter above.

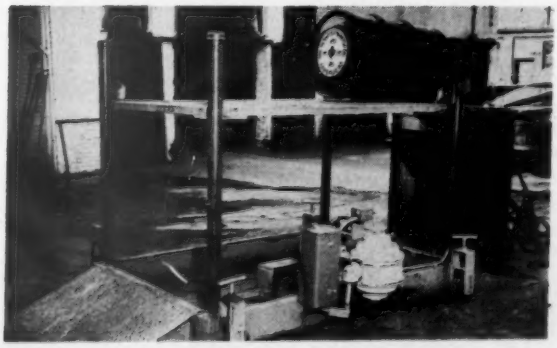


Lacquer raw materials are loaded into these mixers from the mezzanine floor after having been brought up on hydraulic lift from floor level warehouse area.



To increase yield, high solids lacquer bases are cut in these turbo-mixers. After the base is made, it is pumped to reducing tank for final viscosity adjustment.





This portable hoist is drawn with conventional pallet tongue. It can be moved by one man to the various points of use. In loading and unloading trucks it does away with use of skids. Shown here are the lowered (L) and elevated (R) positions. This hoist was manufactured according to the specifications of Schaefer Varnish Co.

CRYSTALLIZATION OF PHTHALOCYANINE BLUE

By
R. E. BROUILLARD
T. D. MUTAFFIS

THE DISCOVERY and commercialization of phthalocyanine blue is one of the outstanding achievements of the dyestuff industry. This pigment has such outstanding properties that it has been characterized as near ideal. Ideality might have been achieved had it not been for a tendency toward instability on incorporation into certain surface coating compositions. Because of this deficiency phthalocyanine blue has been characterized as a pigment having poor "can stability".

In spite of this shortcoming, phthalocyanine blue has found a very substantial market. This may be illustrated by the development of the *General Dyestuff Corporation line.* GDC introduced its first Heliogen Blue in 1937. Over the ensuing years, this line has been extended to many brands which include Heliogen Blue BA CF (aqueous dispersed paste), Heliogen Blue BWSN and BWSN Extra (dispersed powders), and Heliogen presscake and powder brands of various transparency and shade characteristics such as Heliogen Blue BKA, BV, BDV and BDS as well as resinated products such as Heliogen Blue BMP.

It is significant to note that the GDC line is still in a state of vigorous development to meet various trade requirements.

Factors Causing Crystallization

Early investigation of solvent instability showed that the loss of strength and brilliance experienced on ageing paint, enamel or lacquer systems containing phthalocyanine blue was due to crystallization. Thus, the uniform fine dispersion originally present and necessary for maximum color value (Plate 1 of Figure 1) was destroyed by conversion to needle crystals of poor pigmentary value (Plate 2 of Figure 1).

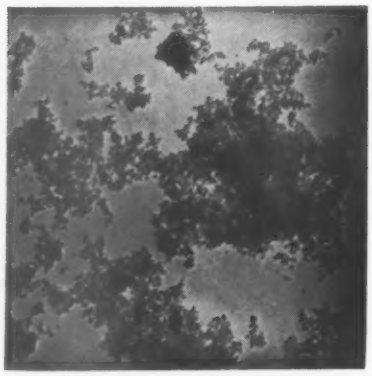


Plate 1, Figure 1. Magnification 10,000X. Uniform dispersion for maximum color value.

Plate 2, Figure 1. Magnification 4,500X. Needle crystals of poor pigmentary value

Further study showed that certain solvents and particularly the aromatics in the subject systems were responsible for the dimensional changes. It, therefore, became customary to avoid aromatic solvents in formulations containing phthalocyanine blue. This procedure, though effective, left much to be desired since it precluded the use of versatile and cheap solvents.

Solvent Stability Test

The tendency of phthalocyanine blue to crystallize was a deterrent to more extensive utilization of this valuable pigment. Consequently, one of the major problems in phthalocyanine technology has been the development of techniques for the prevention of crystal growth in the presence of aromatics. In the extensive studies carried out, as in all scientific investigations, the accurate evaluation of experimental results was of utmost importance. In the early days it was customary to determine stability by exposure of the phthalocyanine blues to toluene or xylene at 60-80°C. and observe dimensional stability by means of the optical microscope. This test is ideal for preliminary laboratory investigation since it is very simple to perform and results are very quickly obtained. However, the data obtained are not sufficiently accurate for modern work. Inaccuracies and, therefore, false conclusions are likely to arise because:

1) Agitation affects the rate of crystal growth.
2) The presence of a few relatively large crystals may obscure the suitability for practical application.
3) Resins and oils encountered in practice often have a stabilizing effect.
4) Limits of resolution of the optical microscope are insufficiently critical for observing particle size differences in or near the pigmentary range.

It is apparent that the simple solvent stability test is inadequate except as a rough screening tool to be used in exploratory work.

Various accurate and more sensitive tests have been developed to evaluate the stability of phthalo-

R. E. Brouillard and T. D. Mutaffis are connected with the Dyestuff & Chemical Division, General Aniline & Film Corp., Linden, N. J.

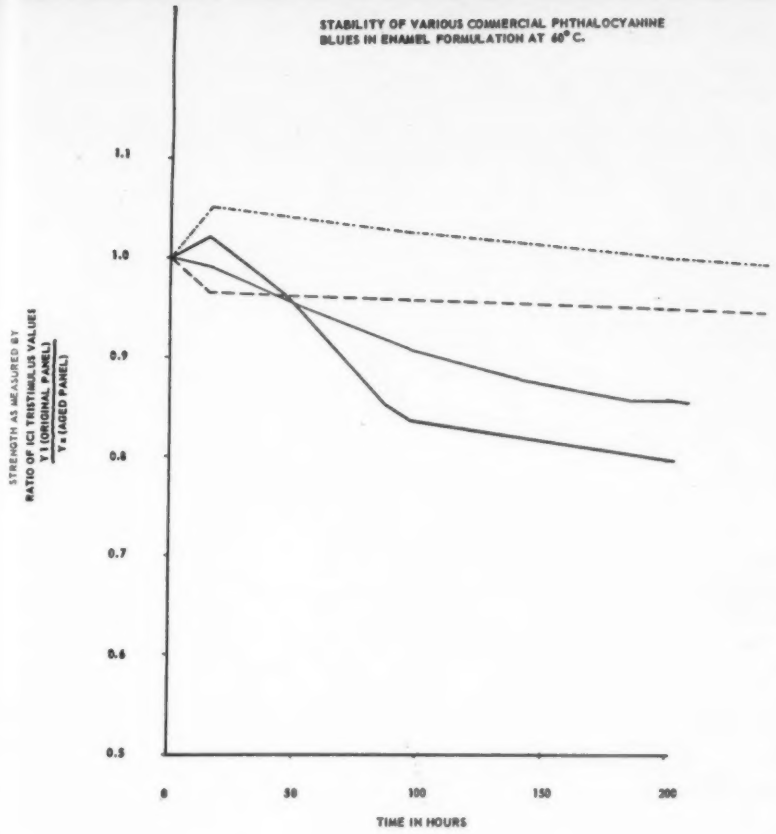


Figure 2

cyanine blues. One of these involves the preparation of a lacquer or enamel containing aromatics which is pigmented with phthalocyanine blue and a solvent stable to yellow. This lacquer is aged at elevated temperatures and the changes in the blue are observed as variations in the green shade.

Suggested Test

A more accurate and, in our opinion, a preferable method is as follows: A white enamel is formulated using aromatics and is pigmented to a light blue shade with phthalocyanine blue. A panel is sprayed with the fresh enamel and the remainder aged for 100 hours at 60°C. A second panel is sprayed and then the ageing and spraying processes repeated. The panels representing fresh enamel, 100 hrs. ageing and 200 hrs. ageing are then compared visually or spectrophotometrically for changes in shade and strength. It should be noted that the panels are prepared by spraying and not pouring, dipping or brushing. This is done to overcome flocculation which might otherwise occur. This method of operation is sufficiently sensitive to enable valid generalizations with reference to long term storage of shelf goods. Figure 2 shows a graphical representation of the stability of various phthalocyanine blues in an enamel as measured spectrophotometrically. It should be noted that even the most stable materials (represented by dotted lines) show a slight degradation. This, however, is not significant in practical application.

Although the above is believed to be a drastic test which, if passed satisfactorily, will indicate suitability for all applications where crystallization is a factor, it is well to evaluate the product in the exact formulation to be used. If the above technique is applied with this limitation excellent results will be obtained.

Dimensionally stable phthalocyanine blues have appeared on the market. Examples of these are General Dyestuff Corporation's Heliogen Blue BG, BNC and BLE. These and similar products have been produced by one of several methods. One of these methods involves grinding phthalocyanine blue with an extractable grinding aid. This gives a greenish blue pigment which does not change appreciably when exposed to aromatic solvents. Plate 3 of Figure 1 illustrates the behavior of such a product when exposed to toluene. It is apparent that slight crystal growth does occur. However, substantially all of the crystal growth is within the pigmentary range and the product does not lose appreciable strength or brilliance due to the exposure. Another method involves the incorporation of a stabilizing agent. Plate 4 shows the characteristics of such a product after exposure to aromatics. As in the above described case the dimensional changes involved are within the pigmentary range and the shade and strength are substantially unchanged by exposure.

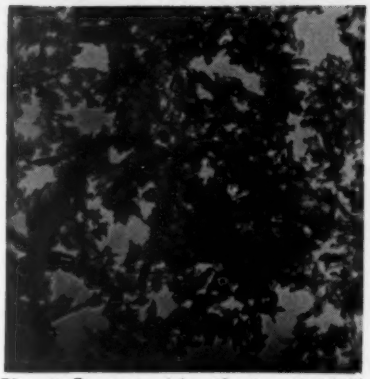


Plate 3, Figure 1. Magnification 10,000X.

Effect of toluene on phthalocyanine blue dispersed with an extractable type grinding aid.

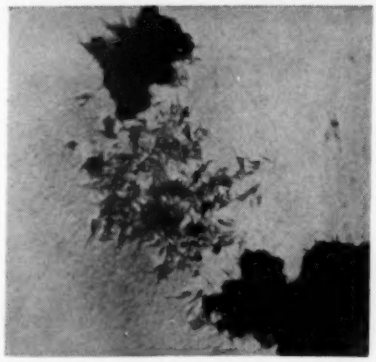


Plate 4, Figure 1. Magnification 10,000X.

Effect of aromatic solvents on phthalocyanine blue pigment dispersed with stabilizing agent.

On the basis of the above data one must conclude that realistic evaluation of phthalocyanine blue with reference to solvent stability cannot be made by simple microscopic examination of the pigment in a solvent. This evaluation must be done by a test closely related to end use and preferably measured by a sensitive instrument such as a spectrophotometer.

Candid Shots of New York Production Club Annual Outing Held at Jumping Brook, Neptune, N. J., June 5th

Candid Shots of New York Paint, Varnish & Lacquer Association Annual Outing, Westchester Country Club, Rye, N. Y., June 18th

News of Paint and Varnish Production Club Meetings

Cleveland

At its last meeting of the season held annually at the Case Institute of Technology the Cleveland Paint and Varnish Production Club honored E. Vernon Ladd and Robert C. Stark with Club Honorary Memberships.

Mr. Ladd served as president of the Cleveland Club in 1932-33 and became president of the Federation in 1937-38. He is with the Vortex manufacturing Company in Cleveland. Mr. Stark followed Ladd as president of the Cleveland Club in 1933-34 but preceded him as Federation president in 1935-36. He is with Pratt and Lambert in Buffalo.

President William M. Tomc presented each with a suitable certificate in honor of the occasion. Both responded with remarks that emphasized that the benefits and associations that accrue from the activities of the Production Clubs far outweigh any contributions an individual can make. To climax the presentation Mr. Stark led the assembly with his famous rendition of the "Fireman's Song".

In addition to Messrs. Ladd and Stark the following past presidents attended their "night"; J. P. Wagner 1923-24; John C. Caldwell 1937-38; Ralph Elmer 1942—43; Eugene H. Ott 1947-48; Sam J. Huey 1949-50 and Robert F. Hall 1952-53. Seven past presidents are deceased.

Elections resulted in elevating Vince L. Sahli of Sherwin Williams to the presidency; Miris D. Wright as vice-president; Mike Malaga of Arco as secretary and George Selden of Upco as treasurer. Elected as members of the Executive Committee were Fred Hollenberg of Lacquer Products; Henry Haberfield of Garland and Allen J. Wandersleben of United Cooperatives. Selected by the past presidents as their representatives were Guy R. Pratt of Continental Products and Sam J. Huey of Sherwin Williams Company.

Outing plans were announced for July 17th at Bessie Millers. Golf chairman Frank B. Pirrone reported for his committee. Council Representative R. F. Hall spoke briefly on the Spring Council meeting.

The Technical program was presented by the Viscosity Measurement Committee. The panel discussion on "Single Point versus Multiple Point Measurements of Viscosity" was moderated by Chairman Robert Wagner of the Sherwin Williams Company.. Stating the case for the single point measurements were G. L. Erickson of the Braden-Sutphin Ink Company, Newton Zucker of Jacroy and Stanley T. Shellenbach of Gibson-Homans Company. The multiple point case was presented by James Loudin of United Cooperatives; Paul Olynyk of Sherwin Williams and Alfred Sahli of Vortex Manufacturing. Audience participation sparked a lively question and answer period. Tape recordings of the discussion were made.

Los Angeles

The regular monthly meeting of the Los Angeles Paint and Varnish Production Club was held Wednesday evening, May 12, 1954 at Scully's Restaurant. One hundred forty two members were present.

President Venatta, the regular delegate to the Spring Council Meeting in New York reported to the Club in the absence of Clyde Smith. Twenty one of the twenty four constituent Federation Clubs were represented at the Council Meeting.

The Federation Treasurer reported a balance of more than $80,000.00 in the general fund and $97,000.00 in the educational fund. The sizeable balances show a need of worthy educational projects at the local level which will receive Federation support.

Venatta discussed the three amendments which were defeated at last year's Atlantic City meeting and were resubmitted at the Council meeting in New York. Article Five was the amendment which calls for an increase in the Board of Directors from six to nine members.

Article Seven calls for change in the term for the Board of Directors from two to three years. Both these amendments were voted approval at the Council meeting and will be resubmitted for a second approval at the annual meeting in November.

Article Eight dealing with the increase in the members of the nominating committee, the said increase being made up of past presidents of the Federation, was disapproved.

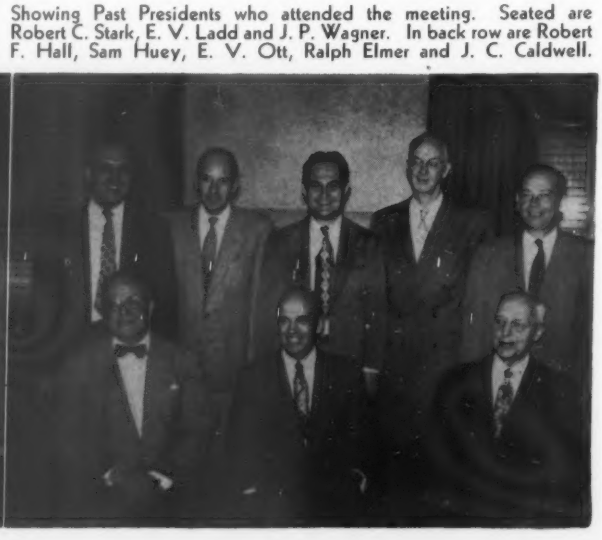
Clyde Smith, Alternate Delegate, was to give a full report at the regular June meeting of the Club.

Following the intermission and the awarding of door prizes, Vern Barrett, program chairman, introduced the speaker of the evening—Dr. Carl Fink, Senior Fellow at Mellon Institute, sponsored by Carbide and Carbon Corporation. His subject was Plasticizers.

Dr. Fink briefly spoke of the early history of plasticizers. Camphor was the first important plasticizer. It was used with gun cotton to give celluloid. For pyroxylin lacquers camphor was for years considered an excellent

Cleveland Prod. Club presentation of Honorary Membership Certificates, showing E. Vernon Ladd receiving Certificate from Pres. W. M. Tomc, as vice-pres. V. L. Cahli and Dr. E. G. Bobalek look on. R. C. Stark reads his.

Showing Past Presidents who attended the meeting. Seated are Robert C. Stark, E. V. Ladd and J. P. Wagner. In back row are Robert F. Hall, Sam Huey, E. V. Ott, Ralph Elmer and J. C. Caldwell.



plasticizer. However, in auto lacquers its disadvantages led to the use of raw and blown vegetable oils which proved better.

The advent of the viny copolymers etc. led to more work with plasticizers.

Dr. Fink divided plasticizers into solvent and non-solvent types. Additionally, they were either monomeric or resinous. The former type has a definite chemical structure as DOP, TCP, adipates, etc. The latter would be the larger mols—a repeating segment in the molecular structure.

A great many studies had been investigated by Dr. Fink in which the properties of hardness and flexibility of plasticizers under varying conditions of temperature and humidity were stressed.

After determining the hardness desired, the plasticizer that gives the greatest elongation should be considered as the most efficient choice.

Philadelphia

Frank M. McNerney, formerly Vice-President, has been elected to the presidency of the Philadelphia Paint and Varnish Production Club for 1954-55. He succeeds P. J. Whiteway, Jr.

The balance of the slate, unanimously approved and elected into office by the membership, was as follows: Vice-President—D.T. Nivin; Secretary—E. G. Fleming; Treasurer—J. P. Snyder; Assistant Treasurer—J. Sandeman; Council Representative—P. J. Whiteway, Jr.; and members-at-large on the Executive Committee—W. Bayer and J. F. Vozzella.

The speaker of the evening, Irwin C. Clare, assistant research director of C. K. Williams & Co., presented a talk entitled "Recent Developments in Iron Oxide Pigments."

Mr. Clare used a set of excellent slides to bring out the following points: (1) classification of iron oxides, (2) reactions in the production of venetian reds, calcined reds, ppt. yellow oxide, and ppt. red oxide, (3) list of the advantages as well as the disadvantages of oxide pigments, (4) microphotographs of various red oxide pigments showing the smaller particle size of the synthetic oxides, (5) the particle size distribution of standard reds, (6) the particle size of the new red oxides which have brighter and cleaner colors, better gloss retention, equal durability and hiding, and easier dispersion. These characteristics were shown in pictures of exposure panels of barn paint, floor paint, and blends of organic and inorganic reds. The second new development outlined was the new grinding circuit which removes the "cobblestones" from natural umbers, siennas, and metallic browns so that they run 98—99% below 10 microns in size. This has resulted in a marked increase in gloss at high pigment loadings, 50% increase in opacity, 80-100% increase in tint strength, and a marked reduction in grinding time.

Hy Katinsky reported that the Production Problems Committee has completed the "Safety and Production Manual for Employees" and that a second paper for the employer is underway.

Baltimore

Officers elected for the coming term:

President: William Wright of Intercoastal.

President Elect: Jim Hinz of Bruning Brothers.

Secretary: Jim Cannon of H. B. Davis Co.

Treasurer: Phil Knitz of Baltimore Paint & Color Works.

Ray Crippen gave a progress report on his working committee on fire retardent formulations.

Ira Wilbur presented a report on the last National Federation Council meeting.

Jim Heckel spoke briefly on the qualifications of Mr. James Kortum, proposed by the Northwestern Club for Federation Honorary membership.

After a brief intermission, Mr. A. P. Beardsley of the DuPont Co. presented a slide illustrated paper, "Polyvinyl Acetate Emulsion Paint Formulation". Of particular interest were the weathering results on wood surfaces, previously unpainted or finished with oleoresineous paint. The use of the PVA paint over masonry, wood and galvanized metal all on one formula in one application offered some interesting possibilities. The question of "blister resistance" compared to the new alkyd house paints was raised. The unfortunately poor results of test formula PVA traffic paints was considered from a formulation standpoint.

Kansas City

The Kansas City Paint and Varnish Production Club met for its monthly dinner meeting on May 12, 1954 at the Pickwick Hotel. Twenty-five members and guests were present.

In the absence of President Harold Kicker, the Vice President, Russell Griswold, took charge of the meeting. The minutes of the previous meeting were approved as read.

Mr. Niewrzel reported for the technical committee that a study had been made of possible topics for a new club project. No specific recommendation could be reached. It was agreed that the topic should be simple, one that all members can participate in. One suggestion was a study of tinting paste strengths. Another suggestion was to study the miniature paint factory recently developed and reported in the Official Digest. Mr. Thies suggested that Mr. Warner had developed a sag test for paints which would need wide testing and evaluation to determine its usefulness. Mr. Warner was asked to explain his test, and the club members showed considerable interest in this possible project. Mr. Warner suggested that two dozen samples of competitive products of various types might be obtained and that each member company could rate the products with the proposed sag test and conventional methods. The results would then be correlated for the paper.

Mr. Thies moved that the technical committee select a topic for a new club paper. Mr. Thompson seconded the motion. It carried.

Mr. Leslie went on record against an earlier suggestion to evaluate certain products, such as anti-settling agents or anti-silking agents, and thereby, directly or indirectly, endorse the product of any one or more companies.

Mr. Hancock reported that the fineness of grind samples for the test fence study in Joplin have been applied.

Mr. Niewrzel reported that a list of club projects in progress published in the March issue of the Official Digest did not show the Kansas City Club project which is under way. He asked that the secretary inform the Federation of this omission.

Officers for the coming term are:

President: Mr. Eric S. Wormser

Vice President: Mr. Harold G. Kicker.

Secretary: Vernon A. Niewrzel.

Treasurer: Mr. Ellis G. Chandlee.

There being no nominations from the floor, Mr. Thies moved for unanimous election of the slate. The motion was seconded and carried.

Mr. Hetrick of Barada and Page, introduced the speaker of the evening, Mr. Herbert Beardsley of the DuPont Company. Mr. Beardsley spoke on Polyvinyl Acetate Paints. The speaker gave an interesting presentation with the help of slides on the formulation of polyvinyl acetate paints for both inside and outside use, their properties and their correct application.

New England

Election of officers and a talk on Exterior Masonry Paints featured the May meeting of the New England Paint and Varnish Production Club held at the University Club.

The officers for the forthcoming year are Harry Kelfer, President; A. R. Lukens, Vice President; Howard Jerome, Secretary; W. R. Holmes, Treasurer; and Harry Kelfer, Council Representative.

Stewart White gave a complete re

(Turn to page 67)

W. Howard Wright Enrolled in 50-Year Club of PV & L Industry

Mr. W. Howard Wright has been enrolled as a member of the Fifty Year Club of the Paint, Varnish and Lacquer Industry, according to a recent announcement. Mr. Wright has been President of the Schenectady Varnish Company since he founded it in 1906. He had previously been with the General Electric Co. for ten years as a Chemist and Chief Chemist.

W. H. Wright

Mr. Wright was graduated from Union College in 1895 with a B.S. in Chemistry.

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Devoe & Raynolds Acquired by N. Y. Shipbuilding Co.

Acquisition of the 200-year old Devoe & Raynolds Co., Inc., by the New York Shipbuilding Corp. was announced June 16 by Louis E. Wolfson, Chairman of the Board of the Camden, N. J., ship and industrial construction firm.

Control of the paint manufacturing concern passed to N. Y. Shipbuilding through acquisition of some 40 per cent of the outstanding voting stock of Devoe for an undisclosed price. It is understood that Mr. Wolfson will become chairman of the board of Devoe & Raynolds and that present Devoe officers, with William C. Dabney as President and Elliot S. Phillips, Earl L. Pangborn and E. Brewster Prindle as Executive Vice Presidents, will continue to serve the company.

Mr. Wolfson is also board chairman of Merritt-Chapman & Scott, construction and salvage firm which like N. Y. Shipbuilding, also gained control of a steel manufacturing company earlier this year. He said present plans called for coordination of the operations of Devoe & Raynolds with those of the shipbuilding concern in the belief that such action will affect "many economies in the structure which will prove beneficial for both clients and shareholders."

The Chairman also announced the possibility of expanding the production of Devoe & Raynolds chemicals, which, he said, now account for 15 to 20 per cent of the firm's business.

Kansas City-St. Louis Meeting Features Lab Techniques

A good control laboratory can put ball milling on a predictable basis, according to Aaron Barkman, production head at Sherwin-Williams' South Kensington plant.

Mr. Barkman told some 160 technicians attending a joint meeting of the Kansas City-St. Louis Production Clubs, meeting May 22 in St. Louis, that correlation between the laboratory and plant production in ball or pebble mills has reached a point where the laboratory can reliably predict plant schedules. Working with this knowledge a good laboratory can, he said, predict the behavior of a batch of 2,000 gallons working with a quart sample

In practical production, Mr. Barkman asserted, a laboratory can prepare curves on different formulas at different variables that will accurately predict the number of hours a batch must be milled to reach a desired "grind."

He went on to describe how he had employed a 1-gallon paint can shaker as a control device. Small containers with a 50 percent ball charge, including voids, and a 40 per cent paste charge, were placed on the equipment and shaken. Steel balls—1/8" ball bearings—were used. By using proper proportions of mix and ball, he said, one minute in the laboratory was equated with one hour in the plant.

Not only is this type of testing useful in predicting results, Mr. Barkman said, but it can be used to anticipate mechanical difficulties before they might otherwise be noticed.

He cited a case in which a batch did not meet the schedule predicted by the laboratory, and in which subsequent investigation showed that lifter bars in the mill were worn. As soon as new lifter bars were placed in this mill, the equipment returned to its proper correlation with the laboratory.

While conceding that roller mills could not be exactly correlated with the laboratory due to a greater number of variables—not the least of which is the skill of the operator—he pointed out the drastic improvements in their use which laboratory study has produced in the last decade. Citing an accepted thru-put rate of 25 to 50 gallons an hour a decade ago on a roller mill producing fine enamel, he reminded the audience in the Chase Hotel that a minimum thru-put of 300 to 500 gallons per hour is considered mandatory today, with maximum thru-put of 1,000 gallons per hour not being unusual.

Mr. Barkman cautioned his audience on several aspects of roller mill operation, asserting that careful work pays big dividends:

"Cleanliness" of dispersion, he said is frequently the result of poor premixing techniques and takes far longer to correct than to obtain proper original dispersion.

Reading of the Hegman gauge is also essential, he continued, pointing out that a difference of ½ Hegman on a reading can effect the output by 30, 50 or even 100 per cent.

Setting of the take-off blade and proper functioning of the cooling chambers in the mill are also critical factors he reported.

But, in the last analysis, he declared, the operator is the biggest variable in roller mill operation, it being possible for one man to better the output rate of another by 100 per cent.

Mr. Barkman concluded that, in a medium sized plant, a laboratory to control production could be equipped for approximately $5,000; that such a control operating with a well-organized program can pay for itself in terms of increased efficiency and production.

Following Mr. Barkman, Ed Scholl, of Esco Laboratories, spoke on "Pigment Dispersion in Latex Paints." Test results, he said, indicated that the best pigment dispersant is casein, solubilized with ammonium hydroxide at 170° F. for 60 minutes. The studies also indicated that stain removal is related to optimum dispersion, as well as being important in obtaining a tightly-knit film.

Final speaker of the day was J. J. Taylor, consultant, who described studies of fine pigment dispersion on the Morehouse mill. While he emphasized the importance of paste viscosity in the operation of the mill—a range of 10 Kreb units was said to give optimum results for any given set of stones—he enumerated other critical points to be watched for producing fine grinds.

One such point, he said, was allowance for mill expansion after warm-up, which, he said, has been found by actual measurement to be as much as .0003" to .0004" on production mills. Fine grinds, he said, should be started on a tight setting and later "backed off" to allow for this expansion.

He also cautioned on stone condition, pointing out that new, unsealed stones will not give fine grinds until they have been sealed by use.

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Continental Can Producing Aerosols in Western Plant

Production of a full line of 12-ounce non-food aerosols at its metal container plant in Stockton, Cal., has been announced by the Continental Can Company. Both dome and concave top aerosols are being manufactured in the Stockton plant, according to the company.

Pennsylvania Industrial Appoints Sales Agencies

Pennsylvania Industrial Chemical Corporation has announced the appointment of sales agencies in four of its territories.

The J. A. Coulson Co., of Houston, Texas, will represent PICCO in the Southern Texas area; Harry G. Knapp will be sales agent in the greater St. Louis area; the Robert F. Sheahan Co., Memphis, Tenn., will represent the company in Tennessee, Arkansas and northern Mississippi; and The Griffith-Mehaffey Co., Inc., New Orleans, in the Louisiana area.

Harry G. Knapp and the Robert F. Sheahan Co. will concentrate on the sale of synthetic resins, solvents and solvent oils to the paint industry and other diversified trades in their areas. The J. A. Coulson Co. will handle all products except those used in the rubber compounding industry. The Griffith-Mehaffey organization will concentrate on the sale of synthetic resins, solvents and solvent oils to the paint and allied industries.

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Armour Appoints Representative For Fatty Acid Derivatives

The Chemical Division of Armour and Company has appointed the Raw Materials Company, Boston, as sales representative for its fatty acid derivatives in New England.

The derivatives will be handled in addition to the Armour fatty acid line which the Raw Material Co. has sold for four years.

The company announced plants to establish stocks of the high molecular weight aliphatic chemicals in Boston to assure prompt deliveries.

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American Cyanamid Co. Dedicates New Orleans Plant

American Cyanamid Company dedicated its new Fortier plant near New Orleans in mid-June for production of industrial chemicals from natural gas. Among products to be turned out in the new plant will be acrylonitrile, for use in synthetic rubber, plastics, adhesives, and other products.

Construction of the Fortier plant began in 1952. Currently in production are sulfuric acid, oxygen, and ammonium sulfate. Acetylene, hydrocyanic acid, ammonia and acrylonitrile are expected to go into production shortly, the company said.

DeVilbiss Develops Finishing Method For Plastic Auto Bodies

Development of a method for surface preparation of glass fiber reinforced plastic automobile bodies has been announced by the DeVilbiss Co. The new method is claimed to reduce surface preparation time and open the way to painting such bodies in the conventional manner, using dark, medium or light colors.

The company reports that it worked out the technique using a Kaiser Darrin, manufactured by Willys Motors, Inc. Technicians were reported to have used new materials and newly developed spray equipment consisting principally of a special spray gun equipped with a two-stage external mix cap. The gun is said to be equipped with high fidelity controls to govern a complete and thorough mixture of catalyst and resins.

In addition to development of a surface preparation method, technicians were said to be interested in obtaining a smooth surface on the body so that dark colors, not previously used, could be applied. Painted a jet black, the auto body is said to be on exposition to manufacturers of large plastic parts.

ASTM Elects New Officers and Directors at Annual Meeting

The American Society for Testing Materials elected a new slate of officers and directors at its 57th Annual Meeting in Chicago, June 13-18.

Elected to the presidency of the group for a one-year term was Norman L. Mochel, Manager, Metallurgical Engineering, Westinghouse Electric Corp., Philadelphia. New Vice President on a two-year term is Rudolph A. Schatzel, Vice President and Director of Engineering, Rome Cable Corporation, Rome, N. Y.

The following were elected to three-year terms as members of the ASTM Board of Directors:

Edward J. Albert, President and Treasurer, Thwing-Albert Instrument Co., Philadelphia; John M. Campbell, Administrative Director, Research Laboratories Division, General Motors Corp., Detroit; Paul V. Garin, Engineer of Tests, Southern Pacific Co., San Francisco; John H. Jenkins, Chief, Forest Products Laboratories of Canada, Ottawa, Can.; and Douglas E. Parsons, Chief, Building Technology Division, National Bureau of Standards, Washington, D. C.

Industry Suppliers' Committee Formed at Washington Meeting

An Industry Suppliers' Committee was formed by representatives of suppliers to the paint, varnish and lacquer industry at a meeting in the Hotel Statler, Washington, June 9.

Elected to Chairmanship of the 40-man committee was D. H. Litter, President, D. H. Litter Co. Vice Chairman is J. C. Frendlich, Esso Standard Oil Co.

Joseph F. Battley, President of the National Paint, Varnish and Lacquer Association, spoke to the group, of which he is a member.

According to Chairman Litter, the work of the committee will be to improve uniformity of raw materials and serve as a clearing house for information on materials and equipment used in the industry.

During the meeting it was brought out that the committee could assist the subcommittees of the Scientific Section in determining test methods for testing raw materials and could assist in the preparation of raw materials and equipment indexes.

The committee, it was announced, will be divided into subcommittees to perform specific functions.

Shell Chemical To Acquire Major Assets of Lac Chemicals

The Shell Chemical Corporation and Lac Chemicals, Inc., have announced a transaction under which Shell is to acquire the major physical assets of the Lac organization, effective July 1. Announced jointly by R. C. McCurdy, President of Shell, and K. R. Simpson, Jr., Lac Chemicals President, the sale is said to include real estate, inventories, bonded warehouse facilities, and the alcohol denaturing plant which Lac has operating for 18 years in Culver City.

President McCurdy stated that his firm is acquiring the plant to improve Shell's service to West Coast users by providing local facilities for compounding denatured alcohol and proprietary solvents. The Culver City plant would complement the denaturing facilities which Shell already operates in Chicago, Houston, and Sewaren, N. J.

According to Mr. McCurdy, product grades and service levels offered by Lac Chemicals, Inc., will be continued for all grades of industrial ethyl alcohol used by the paint, plastics, food, petroleum, chemical and other industries.

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Johns-Manville Starts New Synthetic Silicates Plant

Johns-Manville Corporation has begun construction of a new plant at Lompoc, Cal., for the manufacture of synthetic silicates for use as inert absorbents, bulking agents or extenders in paint, rubber, paper, cleansers, insecticides, fertilizers, dry cleaning, petroleum and other fields.

Construction of the new plant follows an announcement from L. M. Cassidy, Chairman of the Board, that Johns-Manville will spend $18,500,000 this year on expansion and improvement projects.

Made from diatomite, the fossilized remains of tiny marine plants called diatoms, the synthetic silicates produced at the Lompoc plant will comprise an entirely new line of J-M products, according to the company. The silicates will be manufactured directly from crude diatomite by reaction with lime or magnesia under pressure.

To be in operation in 18 months to two years, the plant is located adjacent to present Johns-Manville operations where the company operates what is claimed to be the world's largest and purest known deposit of diatomite.

Ground breaking ceremonies are started for National Can Corporation's new Port of Baltimore expansion by, l to r: Andrew M. Toft, Vice President of National Can; Robert S. Solinsky, President; Donald C. Lillis, Chairman of the Board; John L. Kronau, Chairman of the Port of Baltimore Commission; and Arthur B. Price, Acting Mayor of the City of Baltimore.

National Can Breaks Ground For $5,000,000 Expansion

National Can Company broke ground the first of last month to start a $5,000,000 expansion program of the company's Baltimore, Md., plant facilities. New construction will comprise wharfage, warehousing, storage and additional facilities for manufacturing and lithography.

Mr. Robert S. Solinsky, National Can President, said the expansion was made necessary by the company's continuous growth and would enable the company to make greater and more effective use of the facilities of the port of Baltimore.

Carbide and Carbon Chemicals Establishes Award

Establishment of a scientific award by Carbide and Carbon Chemicals Co. has been announced by John Kenneth Wise, chairman of the Paint, Plastics, and Printing Ink Division of the American Chemical Society, which will administer the award.

It will be given each year for the outstanding scientific contribution reported in a technical paper before a regular meeting of the division. First winner of the award will be announced in June, 1955.

The new prize will be financed from royalties from the sale of the book, "Technology of Solvents and Plasticizers," by Arthur K. Doolittle, past chairman of the division and assistant director of research of Carbide and Carbon Chemicals Co. This company, which has sponsored the book, has indicated its intention of supplementing the royalties in the initial year, if necessary, so that in no year will the prize be less than $300.

Eugene J. Kelly, Director of the Michigan Research Division of the Sun Chemical Corporation, receives receives the first Ault Award "in recognition of distinguished contribution to the advancement of the printing ink industry" from Dr. Harry L. Fisher, President, American Chemical Society, at annual meeting of the Natl. Assn. of Printing Ink Makers at Edgewater Beach Hotel, Chicago, May 24. At right is donor Bromwell Ault, Vice Pres., Interchemical Corp.

Archer-Daniels-Midland Co. Purchases Resin Div. of U.S.I.

Purchase by Archer-Daniels-Midland Co. of the resin division of U. S. Industrial Chemicals Division of National Distillers Products Corporation was disclosed in late May, effective June 1.

The transaction, for an undisclosed amount of cash, was announced jointly by Thomas L. Daniels, ADM President, and John E. Bierwirth, President of National Distillers Products Corp., of which U.S.I. is an operating division. Involved in the sale are U.S.I. resin plants at Newark, N. J., and Pensacola, Fla., along with inventories, formulations, and trademarks owned by the resin division.

The purchase was characterized by ADM President Daniels as a "natural and timely move." He pointed out that ADM produces many of the raw materials used in the manufacture of the alkyd resins made at the Newark and Pensacola plants. These materials include linseed oil, soybean oil, fatty acids, and glycerine. He expressed the opinion that consolidation of the two operations will result in much stronger sales and research programs than have been possible previously by the individual concerns.

The addition of the Newark and Pensacola plants gives ADM a total of six plants which can produce alkyd resins. The others are located at Minneapolis, Minn., Edgewater, N. J., Toronto, Canada, and Los Angeles, Cal. Mr. Daniels said that most of these plants will soon be set up to produce U.S.I. formulations, and that this will result in improved service. The addition of the U.S.I. resins will augment the present line of vegetable oils, treated and special oils which ADM supplies to the paint and allied industries, he said, enabling ADM to supply mixed carloads as well as compartment tank bulk deliveries, at "accompanying savings to users."

The complete U.S.I. synthetic resin line includes: "Arochem" modified maleics and phenolics; "Arofene" pure phenolics; "Aroflat," for special flat finishes; "Aroplaz" alkyds and allied materials; "Aropol" copolymer modified alkyds and polyesters; ester gums of all types; and processed natural resins.

The Newark plant of U.S.I., built in 1949 for manufacture of synthetic resins and industrial alcohols, also houses the resin research laboratory. It is presently manufacturing 150 basic products.

The nine-building Pensacola plant, completed in 1940, originally designed to produce hard resins, now manufactures soluble resins which are used in protective coatings and for other purposes. It also produces phenolic resins used by the foundry industry in new shell molding processes.

Linseed oil for Newark and Pensacola will be supplied by ADM plants at Minneapolis, Minn., Kenedy, Texas, and Buffalo, N. Y. Soybean oil will be shipped from ADM's Decatur, Ill., plant and recently completed Mankato, Minn., mill. Glycerine will be shipped from the ADM Wyandotte, Mich., plant until ADM's new higher fatty alcohol plant is completed at Ashtabula, Ohio, next December. Fatty acids will be supplied by ADM plants located at Minneapolis, Edgewater, and Wyandotte.

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Canadian Industries, Ltd., to Expand Paint Facilities

Canadian Industries, Ltd., is reportedly planning a $1,500,000 expansion of its York, Toronto, facilities. Said to be the result of rapid increase in its paint business and expected future growth, the project will include extension of the warehouse, research and development laboratory and boiler house.

The new facilities will make possible increased study of color trends, production of manuals, surveys of color conditions, and better color service. The technical service station expansion is said to be designed to assist industrial manufacturers using highly specialized finishes.

With construction scheduled to start early this month, the expansion, it is said, will double warehouse space, increase employment 15 per cent, and accommodate a technical staff of 125—more than double the present staff.

The present laboratory was officially opened in 1952 to service CIL's paint business across Canada. Color advisory and technical service personnel will move from the company's West Toronto plant to the York site.

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Research Organization Opens Coatings Section

Resin Research Laboratories, Inc., of Newark, N. J., has announced the opening of a coatings sections to be devoted to work on paint, varnish, lacquer, latex, waxes and related materials. According to the company's announcement a complete testing, evaluation and application department is also available in the section. Other services said to be available to industrial and governmental sponsors are provided by sections for resins and polymers, synthesis, and corrosion.

National Starch Announces Aid-To-Education Program

Final plans for an aid-to-education program have been completed by National Starch Products, Inc., according to an announcement by Frank Greenwall, President of the company. Mr. Greenwall said arrangements have been made to establish undergraduate scholarships of $2,000 each at Columbia University, Case Institute of Technology, The University of Nebraska, North Carolina State College, Syracuse University (N. Y. State School of Forestry), and Rutgers University.

Frank Greenwall

To aid the privately-financed schools in defraying the administration of the scholarships, National is also awarding an additional sum annually to the chemistry departments of the schools concerned. The announcement emphasized that recipients of the scholarships acquire no obligation as to future employment with company.

The scholarships are to be granted in the general fields of chemistry and chemical engineering, and applicants must be in need of financial assistance, the company reports.

Further plans in the company's educational program call for additional grants to be awarded to meritorious graduates of local schools where National Starch plants are located.

The company manufactures and produces resins, adhesives and starches.

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Goodyear Paint Technologist Dies on Leave of Absence

Joseph J. O'Neill, paint technologist for The Goodyear Tire & Rubber Co., died May 29 at his home in Folsome, Pa. Mr. O'Neill, 35, was on leave of absence from the company. He joined Goodyear in 1950 after nearly 10 years in the paint industry as a research and development chemist. A year later he was named head of a new paint development laboratory in Goodyear's chemical division.

J. J. O'Neill

A graduate of Drexel Institute of Technology, he was secretary of the paint division of the American Society for Testing Materials and a member of the American Chemical Society.

Glycerine Producers' Assoc. Seeks Research Award Nominees

The Glycerine Producers' Association has announced that nominations are being sought for its 1954 Glycerine Research Award.

This group of awards is granted annually by the Association to "recognize and encourage research leading to new and improved applications of glycerine or glycerine derivatives to products or processes." First award is an honor plaque and $1,000; second award, honor certificate and $300; and third award, honor certificate and $200.

The research work may concern itself with the chemical, physical, or physiological properties of glycerine, or with properties of glycerine-containing or glycerine-derived materials. It may deal with applications which of themselves are currently or potentially of value to industry or the general public, or it may deal with scientific principles or procedures likely to stimulate future applications.

Originality in extending the application of glycerine into new fields of usefulness will also receive special consideration for awards.

According to the Association, first consideration for the 1954 award will be given to work brought to a successful conclusion or clear-cut point of accomplishment during the current year, regardless of the date the work was initiated. Previous years' work, the significance of which has been confirmed by commercial application in 1954, will also be eligible, it was reported.

Further information is available from the Association at 295 Madison Avenue, New York 17, N. Y.

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Dow Exhibits Fire-Retardant Coating at Plastics Show

A fire-retardant coating with decorative and durable properties developed in the Coatings Technical Service Laboratories of the Dow Chemical Co. was exhibited at the Sixth National Plastics Exposition, June 7-10. This coating is based on a vinyl latex, Dow Latex 744-B.

It is said that this new coating overcomes many of the difficulties—excessive brittleness, poor durability and complicated make-up procedure—inherent in previous intumescent coatings.

National Lead Company new headquarters building at Sayville, L. I.

National Lead Opens New Headquarters for Test Station

The National Lead Company recently opened a new headquarters building at its Experimental Test Station at Sayville, Long Island, N. Y.

The new building contains offices and paint shops for the station, established in 1917 for scientific and impartial studies of various paint materials. The written records of the behavior of paint materials on the station's 2-½ miles of test fences are said to represent the largest continuous testing experience available to technical representatives of the coatings industry in the United States. Case history books are claimed to number more than 500 volumes.

In addition to the new headquarters building, the 20-acre tract encloses several workshops in addition to 53 test fences on which, the company reports, as many as 30,000 tests may be going on at the same time.

Du Pont Pigment Sales Mgr. Retires After 47 Years

Mr. Reuel S. Burr, former sales manager for the Du Pont Pigments Department in the Southeastern District, has retired from the company after 47 years of service.

Mr. Burr, who lives in Philadelphia, had directed Du Pont's office in that city for 19 years.

He began as an office boy at Harrison Brothers, which Du Pont bought in 1917. Before becoming assistant sales manager, he also worked as a clerk at the plant and as a stenographer. He was made a Du Pont pigment salesman after serving in World War I.

At a recent meeting of the United Defense Fund called by President Eisenhower, N. W. Kelly, President of Southern Varnish Corporation, Roanoke, Va., second from right, met with General of the Army Omar N. Bradley, left, General James Doolittle, right, and civic leaders from across the country. With Mr. Kelly is W. W. Craigie of Richmond, Va. UDF funds support the work of USO and the defense-related programs of the American Social Hygiene Assn., United Seamen's Service, National Recreation Assn. and United Community Defense Services.

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Continental is ready to give you the soundly-constructed paint cans you need *without delay.* We're also eager to make available to you numerous helpful services to keep your filling and closing operations running smoothly, your product quality steady. Any or all of our research and engineering services can be tailored to your individual needs. If you're ready for some fast action — or just want to talk things over — why not look into Continental's Tailor-Made Package Service. It'll be a pleasure to come and see you anytime you say.

Our **"TRIPLETITE"** paint cans provide a 50% increase in guard points against oxidation and wasteful paint skin formation. In lid and lid seat, metal binds to metal at three points, instead of the usual two.

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Standard Oil and Glidden Co. Announce New Paint Chemical

A new chemical-from-oil, expected to result in a host of pioneer products, including paints with greatly increased resistance to scratching, harsh chemicals and other abuses, was announced here today by the Standard Oil Development Company.

The oil research firm also announced that the Glidden Company has been licensed to develop surface coating uses for the new petrochemical, called C-Oil by the laboratories.

Seven years' experimentation with C-Oil point to a wide variety of end uses, according to Standard Oil Development. Long-life neutral tone varnishes, masonry paints and metal primers have already been produced experimentally from C-Oil.

Glass-like plastics which may be machined almost like metal have been made from the new product, and unusual electrical properties indicate a future use for C-Oil plastics in high frequency electronic equipment, according to the announcement.

C-Oil is a heavy bodied, sticky, almost colorless liquid based on butadiene—a petroleum-derived hydrocarbon also used to make one type of synthetic rubber. Semi-commercial quantities of the new petrochemical are now being produced at the Esso Laboratories in Baton Rouge, La., but it will be several months before C-Oil products reach the market.

Extensive studies by Standard Oil Development, central research affiliate of the Standard Oil Company (New Jersey), coupled with tests by Glidden, indicate that C-Oil may basically alter industrial paint formulation.

If further developments prove as successful as indicated, C-Oil will reduce industrial paint manufacturers' dependence on linseed, soya, tung and other agricultural oils, which fluctuate widely in price and supply. With C-Oil, the Glidden Company anticipates better quality control than is possible with presently used oils.

Experiments show that surface coatings made from C-Oil are so hard it is difficult to scratch through them. Even after being submerged in a harsh chemical solvent for five years, a C-Oil enamel still looked like new and resisted scratching. Similarly, the new type of coating has demonstrated excellent resistance to attack by alkali, dilute acid, or water.

Standard Oil's new C-Oil is a heavy bodied, sticky, almost colorless liquid based on butadiene.

Experimental enamels and varnishes with a lasting mirror-like gloss have been made from C-Oil. So smooth and hard are these finishes, a damp cloth will readily remove stains and smudges because they cannot penetrate the surface.

Because it is substantially colorless, C-Oil makes a neutral colored varnish which will bring out the natural grain of wood products. Absence of color also gives this new base stock an advantage in making white paints.

Several actual service trials indicate that paints based on C-Oil may be outstanding for covering concrete playroom floors. Some early batches of the product were put to this use. Observations after two or three years show that the coatings stand up well, particularly on rough patches of concrete, where other paints tended to wear off at the "peaks".

Ability of C-Oil type films to bond tightly to metal surfaces—believed to be two or three times better than previous products—may push this material prominently into the field of primers. Base coats for such things as automobiles, prefabricated wall panels, or office furniture represent potential applications.

Experiments with development of C-Oil as the base for industrial coatings is another step in the constant trend away from the use of purely natural paint raw materials. The trend began with the first nitrocellulose lacquers and continued with development and use of alkyd resins, which are basically synthetic but are usually modified with natural resins or oils; it reached revolutionary importance with the Glidden Company's development of latex base paints.

•

Monsanto and German Firm To Join in Isocyanate Plant

Announcement has been made of the setting up of a plant in the U. S. for production of isocyanate chemicals, the plant to be owned jointly by Monsanto Chemical Co. and Farbenfabriken Bayer Aktiengesellschaft of Leverkusen.

According to Monsanto, the move is the result of several years' research activity on the products. The company expects the jointly-owned facility "will play a prominent role in this important chemical field."

Isocyanates are used in the production of either rigid or flexible porous plastics, new synthetic rubber formulations, fibers, adhesives, and as intermediates in making other chemical compounds.

Justice Sherman Minton of the U.S. Supreme Court, far right, and Mrs. Minton talk over old football days with former teammates at New Albany (Ind.) High School. The Justice, class of 1910, played fullback; C. E. Rogers, left, presently technical supervisor of Devoe & Raynolds, Louisville, Ky., played quarterback; Walter Heazlitt, second from right, played halfback.

Make better alkyds with these top chemicals!

Compare your method with the efficiency of these Armour fatty acids —then select the most suitable

For large volume processing where color retention is not essential, you can produce harder, tougher finishes and save money with Neo-Fat 130. This dependable, quality-controlled, unsaturated fatty acid is specially made to fill a gap in the alkyd raw material market, giving you an extremely low-priced yet consistent alkyd chemical for quantity production. (Titer . . . 28°C. Max.,—Iodine Value . . . 125 Min.—Acid Value . . . 195 Min.—Color Max. . . . 4 Gardner.)

For heat and color stability in high-grade alkyd finishes, Armour Chemical Division provides you with low-cost Neo-Fat 125—the fatty acid that makes whites *stay* white! Extensive color, processing, and drying time tests insure the double stability of Neo-Fat 125 that means better alkyds for you. (Titer . . . 25°C.,—Iodine Value . . . 124 Min.—Acid Value . . . 196-202—Color Max. . . . 4 Gardner.)

For faster processing and brilliant color in your finishes, use the top chemical in the alkyd market—Neo-Fat 140! A titer of only 5°C. keeps it from solidifying until just above freezing. And note the high iodine value and low saturated fatty acid content—they mean more double bonds, giving you faster drying, harder finishes. (Titer Max. . . . 5°C.,—Iodine Value . . . 140-143—Acid Value . . . 197-202—Color Max. . . . 2 Gardner.)

Write to the address below for free samples and prices of these top chemicals. Test the Armour samples and compare efficiency, results, and cost with your present method. We believe you'll choose Armour fatty acids to improve your alkyd production.

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Soltrols are available in regular 4,000 gallon, 8,000 gallon and compartment tank cars. Take advantage of low tank car price and low tank car freight cost. Prompt delivery . . . dependable supply. Write for complete information about high quality Phillips *66* Soltrols.

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Initial Boiling Point	345°F
End Point	405°F
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NEW! **PHILLIPS 66 SOLTROL 150**
Boiling Range (Approx.)

Initial Boiling Point	355°F
End Point	440°F
KB Value	25

PHILLIPS 66 SOLTROL 170
Boiling Range (Approx.)

Initial Boiling Point	410°F
End Point	460°F
KB Value	25

FREE TEST SAMPLES

Like to test Phillips *66* Soltrols? We'll gladly send you samples for evaluation. Just tell us how much Soltrol you need to prove to yourself the advantages of *odorless* Soltrols in your products.

*A Trademark

Phillips 66

PHILLIPS PETROLEUM COMPANY ***Special Products Division, Bartlesville, Oklahoma***

NEW MATERIALS & EQUIPMENT

A MONTHLY MARKET SURVEY

This section is intended to keep our readers informed of new materials and equipment. While every effort is made to include only reputable products, their presence here does not constitute an official endorsement.

GEOPHYSICAL

LAB VISCOMETER
Multi-Speed

Fann Model 35 V-G, a multi-speed laboratory viscometer, is designed for research on Newtonial fluids, pseudoplastics and Bingham bodies. Measures plastic viscosity, yield value, gel strength and may be employed for thixotropic studies.

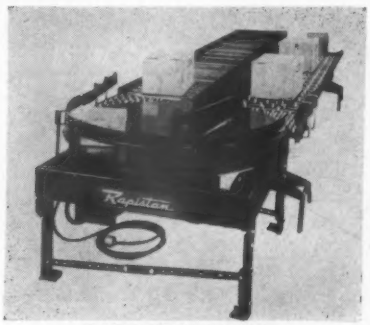
Spindle speeds of 3, 6, 100, 200, 300 and 600 rpm are obtained through a precision gear train driven by a 115 volt 60-cycle synchrous motor. Speeds are selected and changed without stopping rotation. Geophysical Machine Works, 3202 Argonne, Houston, Texas.

PVA VEHICLE
With Basic Ingredients

Polyvinyl acetate vehicle consisting of 9 basic ingredients is said to be of special interest to smaller manufacturers because this homogeneous, pre-plasticized vehicle makes it unnecessary for the manufacturer to carry an inventory of all the components and also reduces his processing time.

This vehicle includes: polyvinyl acetate latex, plasticizer, plasticizer fluxing agents, protective colloid, emulsifying agents, pigment wetting agents, anti-corrosion agents, pH stabilizer, and preservative.

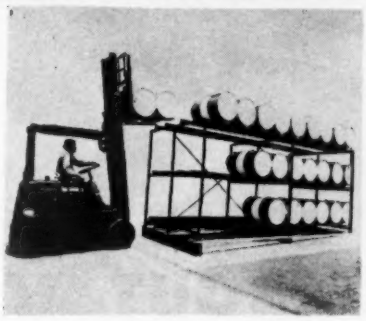
This multicomponent vehicle eliminates the necessary time for the manufacturer to attain adequate plasticization of the polymer, according to the manufacturer, and makes available a controlled vehicle of constant uniformity, ready to be used in the production of stucco paints, interior or exterior paint, or sealers. Available in 55-gallon drums or 5 gallon kits. The California Ink Co., Inc., Paint Raw Material Div., 545 Sansome St., San Francisco 11, Calif.



RAPIDS-STANDARD

POWER TURNTABLE
With Rotating Disc

Power turntable transfers cartons at 90 or 180 degree angles between parallel or right-angle conveyor lines. Unit takes up four feet of floor space, has rotating carrier disc that floats packages around intersections where gravity or power conveyor curves cannot operate. Handles cartons as large as 22 by 18 inches, 24 by 14 inches, or 20 by 20 inches as well as packages too small to transfer successfully on some types of power curves. Turntable rotates in either direction for two-way operation. Rapids-Standard Co., Inc., Grand Rapids, Mich.



JOHNSON & FLAHERTY

DRUM RACK
Gravity Feed Type

Gravity feed drum rack is designed especially for storage of drums, permits the drums on each of six tracks to roll down as the end drum is lifted off with a fork truck. According to the manufacturer, this allows constant rotation without extra labor or inconvenience, and save space. Drums are loaded at the high end of each of the six tracks and can be unloaded both from the lower end and from any other position from the side due to the fact that the rack has no external diagonal rods. 54 drums may be stored on each unit. Built of structural steel with a rated capacity of 500 pounds per drum. Johnson & Flaherty, 5801 District Blvd., Los Angeles 22, Calif.

REFINED TALL OIL
Good Color and Dry

Unitol G-7, a light refined tall oil is said to have the following characteristics: (1) Resins and varnishes form this particular tall oil are light in color to allow formulating in whites and tints. A significant improvement in lack of staining in pigmented films was also pointed out. (2) Films made from this tall oil indicate better drying properties.

Sample and technical data on this tall oil is available on request. Union Bag & Paper Corp., 233 Broadway, New York, N. Y.

- SPECIFICATIONS?
- AVAILABILITIES?
- MARKET PRICES?
- WHICH OIL TO USE?
- HOW TO SAVE MONEY?
- HOW TO GET BETTER RESULTS?

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INDUSTRIAL OILS:

Linseed, Tung, Safflower, Soya, Oiticica, Castor, Sardine. Also Coconut oil, Tallow, Cottonseed oil, Lard, Walnut oil and others.

1 ATLANTA, GEORGIA
G. R. Nottingham

2 BALTIMORE, MARYLAND
W. R. McClayton & Co.

3 CHICAGO, ILLINOIS
Daniel G. Herely Co.

4 CLEVELAND, OHIO
Donald McKay Smith Co.

5 DALLAS, TEXAS
W. W. Richerson

6 DETROIT, MICHIGAN
George E. Moser & Son, Inc.

7 HOUSTON, TEXAS
Texas Solvents & Chemicals Co.

8 KANSAS CITY, MISSOURI
Ack Sales Company

9 LOS ANGELES, CALIFORNIA
California Flaxseed Products Co.

10 LOUISVILLE, KENTUCKY
B. H. Boyet & Co.

11 MILWAUKEE, WISCONSIN
J. W. Copps

12 MINNEAPOLIS, MINNESOTA
Horton Earl Co.

13 MONTREAL, QUEBEC, CANADA
B. & S. H. Thompson & Co. Ltd.

14 NEW ORLEANS, LOUISIANA
Russell Chemical Co.

15 NEW YORK CITY, N. Y.
Garrigues, Stewart & Davies, Inc.

16 PHILADELPHIA, PENNSYLVANIA
Baker Industrial Oils Co.

17 PITTSBURGH, PENNSYLVANIA
Emmett D. Griffin, Jr.

18 SAN FRANCISCO, CALIFORNIA
Pacific Vegetable Oil Corp.

19 SEATTLE, WASHINGTON
W. Ronald Benson, Inc.

20 ST. LOUIS, MISSOURI
Ivan T. Bauman Co.

21 TORONTO, ONTARIO, CANADA
B. & S. H. Thompson & Co. Ltd.

first flight

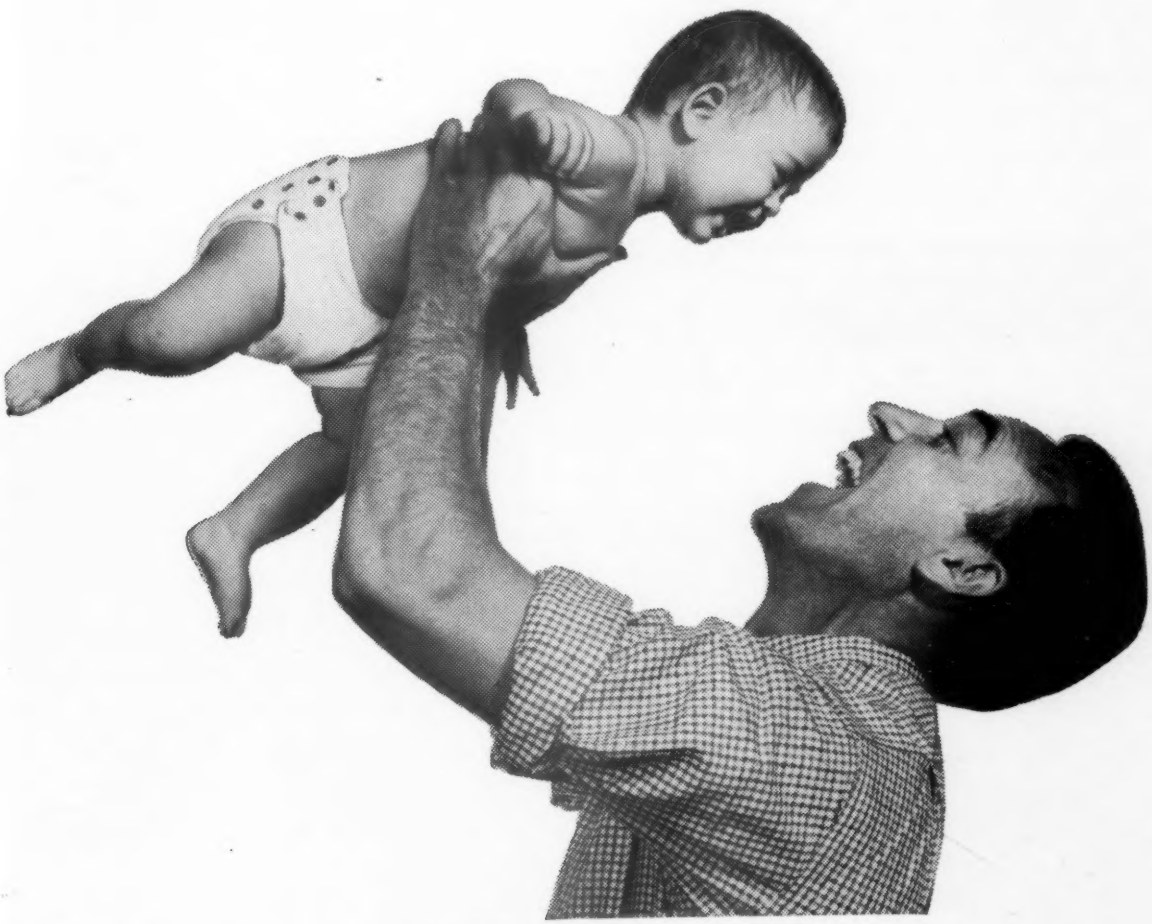
Without trust in Daddy's strong arms, fear would blot out the fun of first flight. But because Daddy's smiling, loving face is below, life adds a thrilling new dimension, founded in love and trust.

All our adventures begin in and come home to the security we cannot do without.

To give and to get security is the main business of living. It is a privilege and a responsibility. It provides us life's finest rewards.

Have you ever thought that this security is possible only in a democracy? And that this is the source of America's greatest strength? For we continue to grow stronger as a nation when more and more secure homes are bulwarked together.

The security of your country depends on *your* security.



Saving for security is easy! Read every word—now!

If you've tried to save and failed, chances are it was because you didn't have a *plan*. Well, here's a savings system that really works—the Payroll Savings Plan for investing in U.S. Savings Bonds. This is all you do. Go to your company's pay office, choose the amount you want to save—a couple of dollars a payday, or as much as you wish. That money will be set aside for you before you even draw your pay. And automatically invested in Series "E" U.S. Savings Bonds which are turned over to you.

If you can save only $3.75 a week on the Plan, in 9 years and 8 months you will have $2,137.30.

United States Series "E" Savings Bonds earn interest at an average of 3% per year, compounded semiannually, when held to maturity! And they can go on earning interest for as long as 19 years and 8 months if you wish, giving you a return of 80% on your original investment!

Eight million working men and women are building their security with the Payroll Savings Plan. For your sake, and your family's, too, how about signing up today? If you are self-employed, ask your banker about the Bond-A-Month Plan.

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PAINT & VARNISH PRODUCTION

N E W
MATERIALS — EQUIPMENT

LEADED ZINC OXIDE

Contains More Active Lead

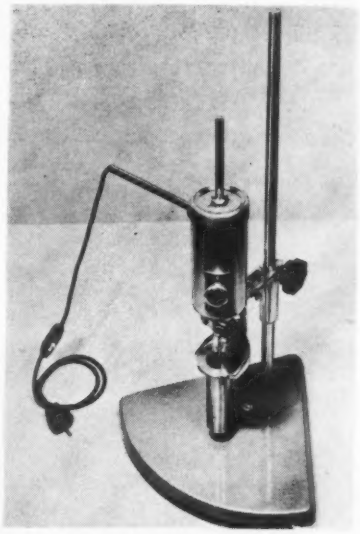
"Ozlo" 18M is a co-fumed leaded zinc oxide composed of 82% zinc oxide and 18% monobasic lead sulfate ($PbO;PbSO_4$). The manufacturer claims that this particular zinc oxide is more efficient than the regular leaded zinc oxides because it contains a higher percentage of the lead in active form. Where the regular leaded zinc oxide contains only 20% of active lead, this particular leaded zinc oxide contains 50% in active form. Thus 60% less lead pigment needs to be used to obtain the same amount of available or active lead in the paint. Controlled reactivity is obtained by co-fuming the lead and zinc into a unit pigment so that each metal acts as a blocking agent for the other, giving controlled formation of metal soaps and the optimum ratio of lead soaps to zinc soaps in the paint film. Claims by the producer, backed by experiment, shows that four pounds of this type of leaded zinc oxide may be used to replace five pounds of regular 35% leaded zinc oxide while retaining equal zinc oxide and equal effective lead content. This means 10 to 15 cents per gallon can be saved in typical house paint formulations. Pigment, Color and Chemical Div., Sherwin-Williams Co., 300 West Lake St., Chicago 6, or 100 Park Ave., New York 17, N. Y.

SPENCER KELLOGG'S AR Linseed Grinding Oil

★ The very top in quality, uniform low acid value oil to assure the best result with reactive pigment formulations.

SPENCER KELLOGG AND SONS, INC.
BUFFALO 5, N. Y.

Special! GRINDING OIL SERVICE Write to the Technical Service Department for help in selecting the right grinding oil to improve paint formulations and paint profits.



DRAGE

VISCOMETER

Torsinal Type

Torsinal viscometer is said to measure detection of viscosity changes in such applications as resin, paint and varnish, printing ink, petroleum, etc., manufacturing.

Features of this instrument include: 1. Frictional forces, which are linearly related to the viscosity, are transmitted through a rotating measuring element to a rotatable mounted motor, the torque of which is opposed by a precision constant modulus hairspring. 2. A pointer which is attached to the motor casing, directly indicates the viscosity while in operation. This feature makes possible a fast, accurate method of detecting alterations in the chemical and physical properties of substances. 3. The instrument has three speeds . . . 20, 64 and 200 R.P.M. A gear box is incorporated for this purpose; its design is such that the measurements are entirely unaffected by friction in the gearing. 4. Changes of viscosity are indicated instantly, making it ideal for continual control purposes. A direct recording attachment is an available accessory. For further information write to Drage Products, 406 32nd St., Union City, N. J. (P.O. Box 330).

DOW

FIELD TEST PROVES DOW LATEX 512-K EXCELLENT FOR EXTERIOR PAINTS

Paint made with this DOW latex was applied on the home below... is still in top condition after twenty-two months

In November, 1952, paint formulated with Dow Latex 512-K was put on this California home. The paint was applied over both wet and dry surfaces by both brush and roller. A recent study of the paint surface shows no noticeable change in appearance, an almost perfect film integrity and no apparent paint failure! Dow Latex 512-K again proved to be exceilent for use in exterior stucco and masonry paints.

For five years Dow has been making many field tests as well as laboratory tests on exterior masonry paints formulated with Dow Latex 512-K. Invariably these paints have proved to be particularly durable. They have also proved to be easily applied and quick-drying.

If you are planning to modernize your paint line with an exterior masonry paint, contact Dow right away. Dow is a pioneer in the development of synthetic materials for better paints, and offers you a wealth of information, including a bulletin "Dow Latex 512-K for Exterior Masonry Paints." THE DOW CHEMICAL COMPANY, Midland, Michigan, Plastics Sales PL 489F.

you can depend on DOW PLASTICS

DOW

NEW MATERIALS — EQUIPMENT

VINYL ACETATE POLYMER

For Latex Paints

Polyvinyl acetate (55% solids) has been especially developed for latex paints. According to the manufacturer, this polymer is sold under the trade-name, "Polycrown AX", and has the following properties: excellent mechanical, freeze-thaw and storage stability; unplasticized form of this polymer produces a clear and coherent film at room temperature; quick dry; minimum blistering as PVA films are porous to water vapor, hence avoids pressure build up by "breathing". Crownoil Chemical Co., Inc., 2-14 49th Ave., Long Island City 1, N. Y.

FIRE EXTINGUISHER

Hand-Operated

Small extinguisher is said to be effective on small "flash fire" within plant. The device is small enough to hold in one hand and is operated by pressing a button at the top of the container. Extinguishing fluid can accurately be directed for a distance of 8 to 10 feet. It is designed to keep handy on work benches, desks, ready for instant use. United Laboratories, Inc., 16801 Euclid Ave., Cleveland 12, Ohio.

SYLOID® 162

Davison's NEW Alkyd-Urea Flatting Agent, for Synthetic Finishes, gives you

MORE FLATTING POWER AT LOWER COST

Laboratory tests and actual use tests have proven that **SYLOID 162:**

- **can be ground in one-quarter the time required by other varnish flatting agents.**
- **the flatting power is two to three times greater than existing materials.**
- **twice as much can be ground in a single mill charge.**
- **the high and low tones are not destroyed as with present varnish flatting agents.**
- **films are tough, durable and mar resistant.**
- **has an exceptionally high chemical purity.**
- **chemical properties are controlled to insure uniform performance.**
- **there is no "seeding".**

For further information on SYLOID 162—the alkyd-urea varnish flatting agent that gives you better performance at lower cost—write

Progress Through Chemistry

DAVISON CHEMICAL COMPANY

Division of W. R. Grace & Co.

BALTIMORE 3, MARYLAND

Producers of Catalysts, Inorganic Acids, Superphosphates, Triple Superphosphates, Phosphate Rock, Silica Gels and Silicofluorides. Sole Producers of DAVCO® Granulated Fertilizers.

WIESSNER

CONTAINER CLOSING TOOL

Hand-Operated

Closing tool for packaging of standard quart or gallon size double-tight, friction-top containers is available as a portable, hand-operated unit.

This unit is of light but rugged aluminum construction—3½ lbs. gallon size and 2¼ lbs. quart size. Two steel handles, topped with non-slip ball-shaped hand grips afford the great leverage necessary for perfect tight sealing without effort on the part of the operator. Two side clamps guide cover in proper position. This unit is designed for small batch runs; laboratories who do not have automatic closing machinery. F. H. Wiessner Co., Burlington, Vt.

SURFACE ACTIVE AGENTS

For Dispersing Pigments

Five grades of sodium lignosulfonates (Polyfon series) is said to be effective in the dispersion of organic and inorganic pigments in latex binders. All grades are brown free flowing amorphous powders. They can be stored indefinitely either dry or in solution without mold growth or fermentation. They are soluble in water, giving alkaline solutions. Grades offered are of standardized sodium sulfonate group content ranging from 5.8 to 32.8 percent, but intermediate grades can be made on special request. Polychemicals Div., West Virginia Pulp and Paper Co., Charleston, South Carolina.

Good Balance—makes the difference in paints made with Latex

YOU GET IT WITH *GEN-FLO*

Gen-Flo Latex offers manufacturers the best available balance between resistance to freeze-thaw cycles and high scrubability. Carefully controlled compounding allows paints made with Gen-Flo to tolerate several freeze-thaw cycles without damage to the emulsion. This same paint will provide a highly impenetrable film which can be scrubbed with a brush more than a hundred times without breaking the paint surface. In addition, Gen-Flo offers excellent flexibility, outstanding alkali resistance and adequate adhesion.

For adding sales advantages and quality features to your latex paint line look into Gen-Flo today. For more information fill out the coupon below or write to The General Tire & Rubber Company, Chemical Division, 1708 Englewood Avenue, Akron 9, Ohio.

Chemical Division
GENERAL
THE GENERAL TIRE & RUBBER CO.
GEN-FLO

Creating Progress Through Chemistry

The General Tire & Rubber Company
1708 Englewood Avenue, Akron 9, Ohio

- ☐ Send literature on Gen-Flo
- ☐ Have your representative contact us
- ☐ Send sample of Gen-Flo

NAME_____

COMPANY_____ STREET_____

CITY_____ STATE_____

PV-7-54

NEW MATERIALS — EQUIPMENT

FOAMING PAINT REMOVER
For Aerosol Application

Aerosol paint remover producing a foaming action is said to be faster, cleaner, and more active than brush-applied types, is available free of cost to interested packagers.

Laboratory experiments indicate that the "slushy" snow-like deposit obtained with the aerosol spray increases the activity of the remover by holding the solvents in contact with paint or varnish better than brushed-on compounds. According to the manufacturer, one application of remover by the aerosol method, it was found, may be equivalent to two brush application, especially on vertical surfaces where the slushy deposit helps prevent run-down of the solvents.

Although it is equally effective with enamels and nitrocellulose lacquers, the biggest advantage of the spray formula is with varnish, usually more difficult to remove than the other types of protective coatings.

Complete details about paint remover formulations for aerosol packaging are outlined in a technical bulletin, KTM-16, E. I. du Pont de Nemours & Co., "Kinetic" Chemicals Div., Wilmington, Del.

WETTING AGENT
Non-Foaming Type

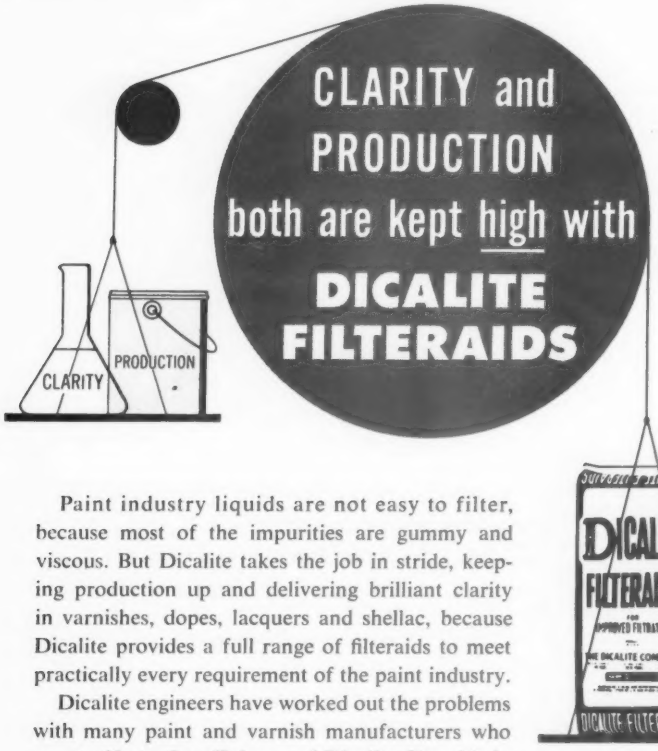
Polyethylene Glyco 400 Monolaurate S-307 is a wetting agent for the pigments used in latex and resin emulsion paints. The manufacturer claims that his material gives rapid, thorough wetting without the formation of undesirable foam during the grinding and mixing processes. Brushing and leveling of the paints are improved with this material, and it is said to be effective to emulsify additives such as alkyd resins and plasticizers for various modifications of latex paints. For more information describing the use of this product, a bulletin is available from Glyco Products Co., Inc., 26 Court St., Brooklyn, N. Y.

PHOSPHATE PROCESS
For Silicone Application

Phosphatizing process is claimed to clean, rustproof and give good finish adherence to steel in one spray application, which is to be finished with silicone coating. According to the manufacturer, steel which was to have a silicone finish had to be treated with a solvent cleaner and painted. Since silicone paints do not adhere to usual phosphatizing process, the advantages of rust-proofing have not been possible for products like heaters, electric motors, furnaces, radiators and other products where heat is a factor. For detailed information write to Divobond Dept., Diversey Corp., 1820 Roscoe St., Chicago 16, Ill.

BUTYLBENZOIC ACID
Chemical Intermediate

Commercial quantities of para-tertiary-butylbenzoic acid (p-TBBA) are now available. Uses of this intermediate are in surface coatings where p-TBBA is employed as a vegetable oil "upgrader" in alkyd resins. The partial replacement of the fatty components of short and medium oil alkyd resins by this intermediate is said to give paint vehicles of faster drying time, harder surface, improved color and color retention, higher gloss, as well as superior chemical and soap resistance. Other uses include preparation of alcohol and glycol esters for plasticizing polyvinyl chloride, cellulose ethers and esters, thickining agent, and stabilizers for vinyl polymers. Shell Chemical Corp., 50 W. 50th St., New York, N. Y.



Paint industry liquids are not easy to filter, because most of the impurities are gummy and viscous. But Dicalite takes the job in stride, keeping production up and delivering brilliant clarity in varnishes, dopes, lacquers and shellac, because Dicalite provides a full range of filteraids to meet practically every requirement of the paint industry.

Dicalite engineers have worked out the problems with many paint and varnish manufacturers who can testify to the efficiency of Dicalite filteraids in the production of linseed oils; cobalt, manganese and lead tallate driers, and paints, as well as the products mentioned before. Their recommendations, together with other valuable data on filtration, is available on request.

DICALITE DIVISION
GREAT LAKES CARBON CORP.
612 SO. FLOWER STREET
LOS ANGELES 17, CALIF.

Dependable GREAT LAKES Dicalite® DIATOMACEOUS MATERIALS

Why many painting projects are never started

Easy brush cleaning is one of the reasons why Vinyl Acetate Water Based Paints promise to be popular with everyone

How many home painting projects are stopped in their tracks because somebody forgot to clean the paint brushes the last time? To put it another way, how many lost sales of paint does the problem of brush cleaning represent?

Heretofore, most paints that could be washed out of brushes with ordinary water would eventually be "washed off" painted surfaces by the same method. But the new vinyl acetate paints exhibit sturdier properties. Even though they are water based, when once dry, water and moisture have little effect on them.

Vinyl acetate paints can be called "one coat" paints. They can be applied with brush, roller or spray and dry in minutes. Best of all, they're porous to moisture vapor, which means they can be used on fresh plaster and stucco —indoor or out. Original applications of these paints ten years ago are still holding up.

The starting point of these new paints is vinyl acetate monomer—fundamental chemical now produced in volume from selected petroleum gases by Celanese. It is converted into resin emulsions by other processors who supply the product to paint manufacturers. Celanese large scale production has been a major factor in stabilizing the price of this chemical and helping to make these new paints competitive in every application. Would you like to know more about the myriad industrial applications for vinyl acetate monomer? They embrace the textile, adhesives, coatings, paper and soil conditioning fields. Write for descriptive folder.

Celanese Corporation of America,
Chemical Division, Dept. 558-G
180 Madison Avenue, New York 16

Celanese* CHEMICALS

*Reg. U. S. Pat. Off.

Personnel Changes

FISHER SCIENTIFIC

Dr. George L. Buc has joined the central control staff as technical assistant to A. W. Fisher, president. He will be a member of the new products and developments projects committees.

KOPPERS

T. C. Keeling, Jr., who directed the hydro-carbons division of Mathieson Chemical Corporation, has rejoined the company as assistant vice-president of the chemical division.

CARBIDE & CARBON

Donald B. Benedict has been appointed works manager. He graduated from University of Michigan in 1932, and received his MS in Chemical Engineering in 1933. He joined the company in that year as technical assistant in the chlorhydrin department, in South Charleston, W. Va. plant. In 1940 he became assistant superintendent of chemicals and resins, and general superintendent in 1952. In 1953 he was transferred to New York as assistant works manager.

D. B. Benedict

G. W. Huldrum

J. M. Selden

W. E. Keegan

K. Fitzsimmons

J. J. O'Connell

SHELL CHEMICAL

G. W. Huldrum has been appointed general sales manager. **J. M. Selden** has been appointed assistant to the vice-president. **W. E. Keegan** has been named eastern division sales manager. **A. Jonnard** has been named manager trade analysis department. **G. R. Monkhouse** continues as vice-president in charge of ammonia division. **K. R. Fitzsimmons** has been appointed industrial chemicals manager. **J. J. O'Connell** has been named solvents manager. **A. V. Snider** and **F. S. Swackhamer** continue as managers of export and resins and plastics departments respectively. **M. L. Griffin** is manager administrative office. **F. W. Hannsgen** is Newark district manager.

GE

Robert B. Young has been appointed supervisor—Advance Development Unit of alkyd products engineering, chemicals materials department. **Fred M. Pugh** has been named manager, midwestern sales district of Silicone Products Department, with headquarters in Cleveland, Ohio.

CANCO

George F. Henschel has been named general manager of sales, with headquarters in New York, according to an announcement from D. B. Craver, vice-president in charge of sales.

Which of these
CARBON BLACKS
meet your tinting and coloring needs?

FURNACE

*Witcoblak® F-1	Most economical. Largest particle size, lowest oil absorption, bluest undertone. Easy dispersion.
*Witcoblak F-2	Slightly darker color than F-1.
*Witcoblak F-3	Jetter masstone. High tinting strength, good blue tone.

CHANNEL

Witcoblak No. 11	Very dense semi-pelletized channel black. Less dusting.
*Witcoblak No. 32	Maximum jetness available at low cost.
*Witcoblak No. 50	Standard low-cost black. Provides ideal combination of color, flow, tinting strength.
*Witcoblak No. 100	Darker grade of channel black than low-price range.
Witcoblak Hitone	Next jetter grade for industrial enamels and lacquers.

Manufactured in Witco-Continental plant at Sunray, Texas.
**Available in pelletized form.*

WITCO CHEMICAL COMPANY
CONTINENTAL CARBON COMPANY
260 Madison Avenue, New York 16, N.Y.
LOS ANGELES · BOSTON · CHICAGO · HOUSTON · CLEVELAND · AKRON
SAN FRANCISCO · AMARILLO · LONDON AND MANCHESTER, ENGLAND

another
STAR
is
born

burnok

thixotropic vehicles

Hitch your wagon to a star.
At last true thixotropy is here. Stearates . . . Bodied oils . . . Soap Solutions and other 'trick liquids' are a thing of the past as we proudly announce—burnok thixotropic vehicles. The new dimension in oil base paints. Not new in the sense of the untried . . . for these vehicles have been in use and under observation for over four years . . . four long years . . . through every imaginable test . . . including the most severe—your test—the paint manufacturer. The results! burnok's proven;

Stability • Easy Brushability • Uniformity • Non-Sagging

Too good to be true? Write today for technical information and suggested formulations to department 41. Put that 'heavenly' body in *your* paints!

Regional Sales Offices or Warehouses in:
Los Angeles, San Francisco, Denver, Atlanta, Seattle, Dallas, Cleveland, Minneapolis, Kansas City and New York

T. F. WASHBURN COMPANY
2244 N. Elston Ave., Chicago 14, Illinois

WITCO

Cyrus E. Silling, Jr. has been named manager of the Witco Chemical Company's Plastics Chemicals Division with headquarters at the Company's main offices in New York. Mr. Silling was formerly with the Ohio Apex Division of the Food Machinery & Chemical Corporation, and prior to that he had been associated with the Hercules Powder Company. He received his Bachelor of Science Degree from Carnegie Institute of Technology in 1944.

WAGENMAN

Walter J. Carr, vice-president, has been elected a director of the company, according to an announcement. He supervises advertising, merchandising and sales programs, and collaborates with Asa Shiverick, president, in the development of the company's expansion program.

DELAWARE

F.S. Byerly

Fred S. Byerly has been appointed district sales manager, covering the mid-west territory. Formerly he was associated with Keystone Varnish Company, Sherwin-Williams Co., U. S. Industrial Chemicals, Inc., and Lawter Chemicals, Inc., and has a diversified experience in paint and varnish technology and technical sales. He is a graduate of North Dakota State, and a member of the National Paint, Varnish & Lacquer Association, the Society of Gallows Birds, and the American Society for Testing Materials.

R. N. Graham

W. F. Reich, Jr

N. C. Babcock.

E. E. Fogle

H. D. Kinsey

CARBIDE & CARBON

Robert N. Graham and **William F. Reich, Jr.,** have been appointed executive vice-presidents, according to an announcement from Harry B. McClure, president. **N. C. Babcock, E. E. Fogle** and **H. D. Kinsey** have been named as vice-presidents.

BENJAMIN MOORE

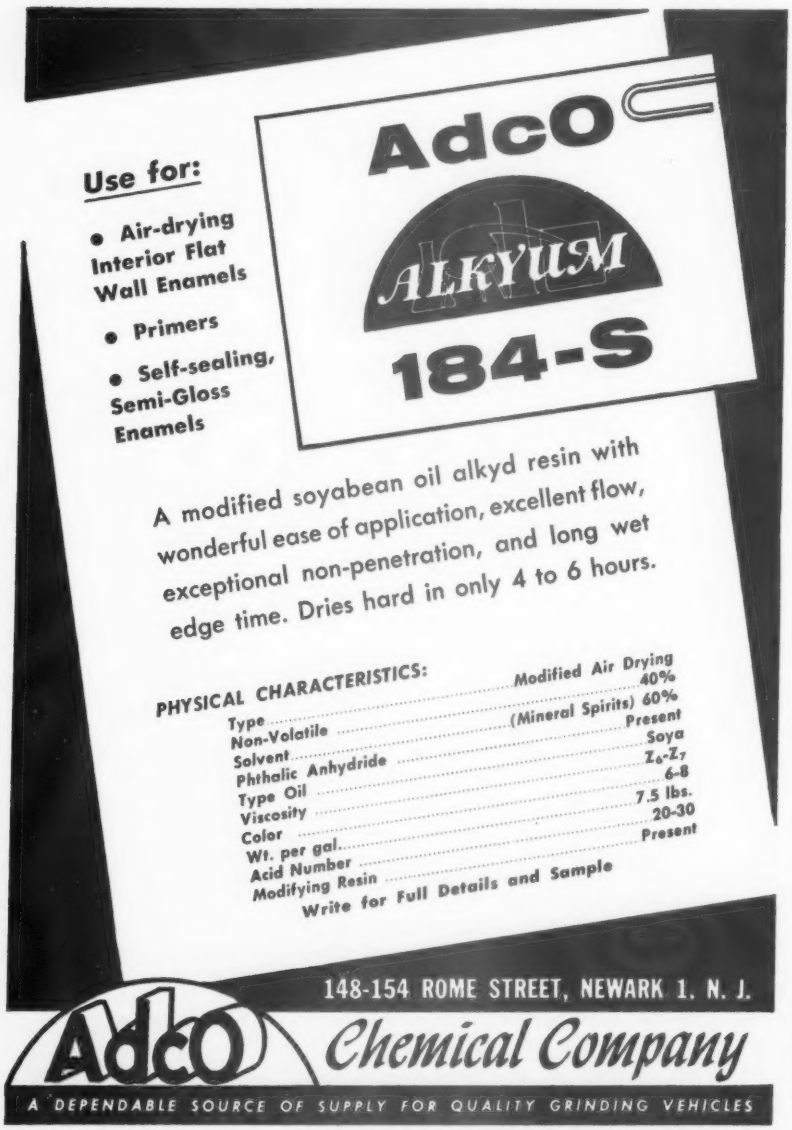
William J. Cinnater has been appointed vice-president; **Leo Silverstein,** vice-president; **Morris R. Wingfield,** vice-president; **Frank C. Wrede,** treasurer, according to announcement of the company.

RINSHED-MASON

D. E. Murphy has been appointed general sales manager, West Coast Division, Anaheim, California. He was recently sales manager of Leffingwell Chemical Co., Los Angeles, Cal

CELANESE

Dr. William L. Evers has been named assistant to the Technical Director of the Plastics Division, Newark, N. J. **Dr. O. V. Luke** will succeed Dr. Evers as assistant manager in charge of Plastics Division Research at Summit, N. J. **Richard J. Savage** has been named Director of Sales of Marco Products Division.


Use for:
• Air-drying Interior Flat Wall Enamels
• Primers
• Self-sealing, Semi-Gloss Enamels
AdcO
ALKYUM
184-S
A modified soyabean oil alkyd resin with wonderful ease of application, excellent flow, exceptional non-penetration, and long wet edge time. Dries hard in only 4 to 6 hours.
PHYSICAL CHARACTERISTICS:
Type Modified Air Drying
Non-Volatile 40%
Solvent (Mineral Spirits) 60%
Phthalic Anhydride Present
Type Oil Soya
Viscosity Z6-Z7
Color 6-8
Wt. per gal. 7.5 lbs.
Acid Number 20-30
Modifying Resin Present
Write for Full Details and Sample
148-154 ROME STREET, NEWARK 1, N. J.
AdcO Chemical Company
A DEPENDABLE SOURCE OF SUPPLY FOR QUALITY GRINDING VEHICLES

W. C. Martin

K. A. Earhart

DEVOE & RAYNOLDS

W. Claggett Martin has been appointed vice-president of Jones-Dabney and Beckwith-Chandler divisions. He will be assistant general manager of the Newark, N. J. plant. **Kenneth A. Earhart** has been named technical director of the resins division of Jones-Dabney.

BROWN-ALLEN

M. Alvin Rose has been appointed sales manager of the Oil Division. Warner Hays, formerly executive secretary of the New York Paint, Varnish & Lacquer Association has been added to the sales staff. J. W. Reid has been named assistant to John B. Fowler, Jr., president.

GENERAL MILLS

Jack H. Allerdice has joined the company as manager, western district, Technical Sales and Service of the Chemical Division. He was formerly with DuPont in the paint and varnish branch.

NATIONAL CAN

Wesley H. Douglass has been appointed assistant to Andrew M. Toft, vice-president. He will be in charge of manufacturing equipment and methods of the company's seven plants.

NATIONAL LEAD

H. W. Hundley, manager Cincinnati branch, has retired, and was succeeded by **S. R. Hollingsworth**. **C. J. Surman** has been named manager paint division, and **W. W. Howard,** manager pigments division.

SHELL CHEMICAL

R. K. Walters has been named assistant manager of manufacturing engineering department in New York. **C. P. Boutte** will serve as construction superintendent during the construction of the Norco plant in Louisiana. **G. A. Daniels** has been named chief engineer at the Ventura, California plant.

HERCULES

John E. Biegner has been appointed New York area district manager of the synthetics department. He succeeds Paul Lefebvre, who is resigning effective August 31st. He is a graduate of St. Peter's College, Jersey City, N. J., and for the past eleven years has been with the synthetic department, first as a research chemist and later as a sales service representative. He will be in charge of the sales of synthetic resins, pentaerythritol, plasticizers, and surface active agents.

J. E. Biegner

GLIDDEN

Douglas C. Leedy has been appointed manager of the metropolitan branch at Alhambra, California. He will also be acting supervisor of the Los Angeles branches, including Huntington Park, Long Beach and North Hollywood.

KENT

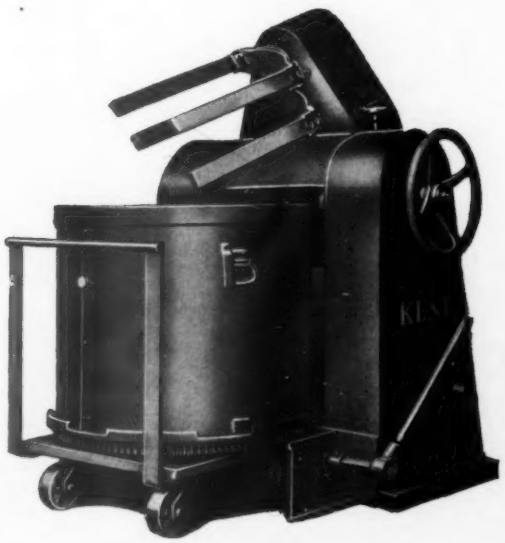
"Super"

MOTOR DRIVEN
PORTABLE CAN
PASTE MIXER

For Better Mixing in Less Time

The DOUBLE BEATER action of blades within the slowly revolving tank speeds production as compared with other agitation methods. Material does not collect between the blades. Tank 30" x 24", 72 gallons total capacity, 60 gallons mixing capacity.

Entire machine substantially constructed, anti-frictional roller bearings throughout, for a long life of "Super" production.



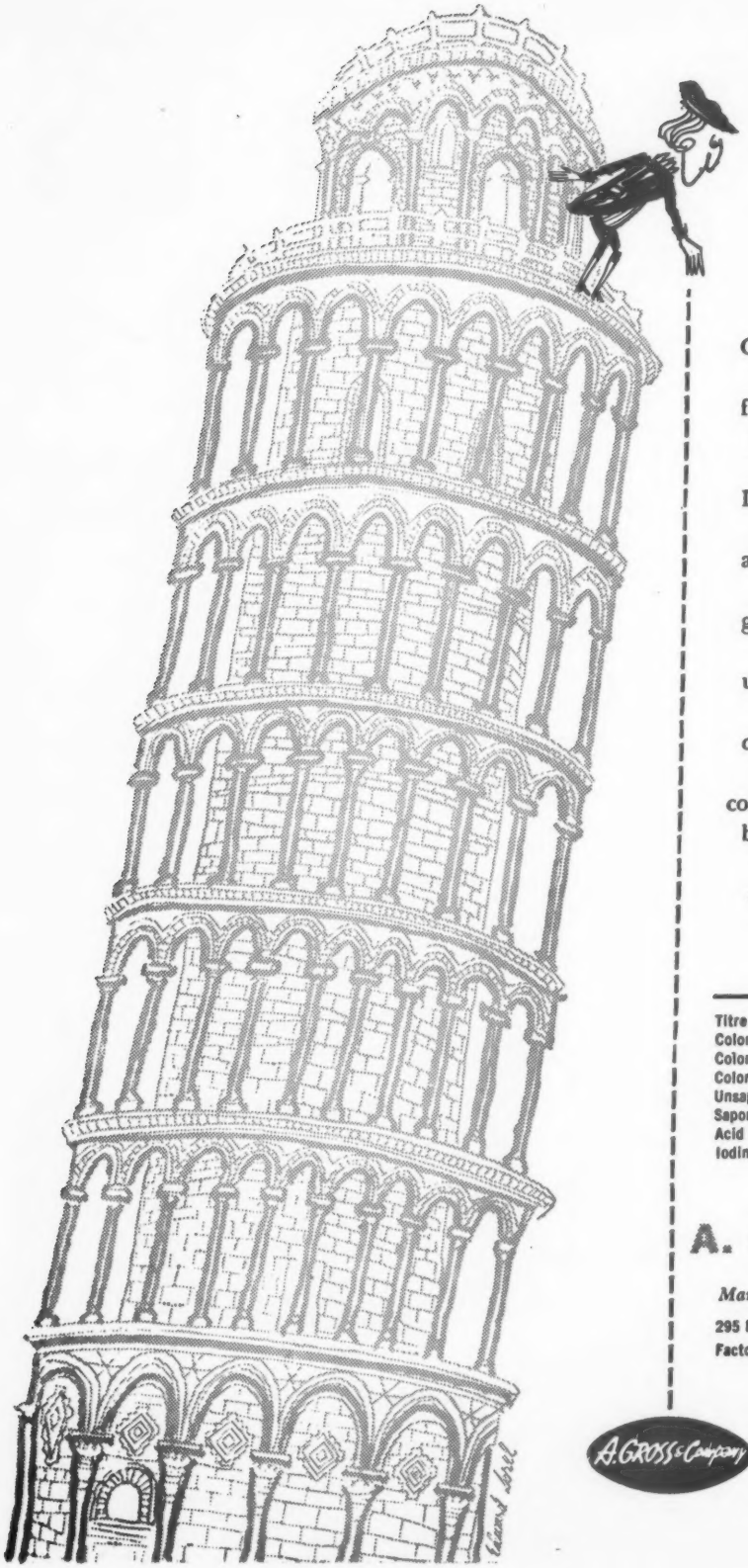
Showing motion of blades and direction can revolves, also stationary scraper blade that is attached to head of Mixer.

Write for Bulletin on Kent "Super" Mixers

KENT MACHINE WORKS, INC.

Specialists in Mixing and Grinding Machinery for Over 60 Years.

37-41 Gold Street — Brooklyn 1, N. Y., U. S. A.



look... and **see**

GALILEO watched a ball fall from the Tower of Pisa. Much was learned from this seemingly simple experience. You, too, can learn much from what may appear to be a simple experience. Let A. Gross & Company supply you with the Coconut Fatty Acids that you need and you will see that due to our modern distillation plant the regular distilled grade is equal to many double distilled materials. You will find that the uniform special grade has had most of the caproic, caprylic and capric constituents removed. You will learn how you can save money by eliminating costly formulation changes made necessary by Coconut Fatty Acids of poor quality.

Send for samples and our catalog "Fatty Acids in Modern Industry."

	GROCO 24 REGULAR	GROCO 26 SPECIAL
Titre	22° — 25°C.	26° — 28°C
Color 5¼" Lovibond Red	1 — 3	1 — 3
Color 5¼" Lovibond Yellow	8 — 12	8 — 12
Color—Gardner 1933	2 — 4	2 — 4
Unsaponifiable	0.25% — 0.50%	0.25% — 0.50%
Saponification Value	261 — 270	250 — 257
Acid Value	260 — 269	250 — 257
Iodine Value (WIJS)	6 — 12	8 — 14

A. GROSS & Company

Manufacturers Since 1837

295 Madison Ave., New York 17, N. Y.
Factory: Newark, N. J. Distributors in Principal Cities

A. GROSS & Company

COMMERCIAL SOLVENTS

T. S. Carswell, vice-president in charge of biochemicals division, has been elected director, according to an announcement from J. A. Woods, president. He joined the company in 1946 after thirty years experience in the chemical industry. Until January of this year, when he assumed his present duties he served as vice-president in charge of research and development. He is a member of the American Chemical Society, American Institute of Chemical Engineers and the Society, of Chemical Industry.

T. S. Carswell

PPG

Albert D. Wagen has been appointed assistant divisional director of the Milwaukee paint division, with headquarters in Milwaukee. He was formerly divisional director of the Pacific Coast paint division.

3 M

E. Harlan Church, assistant treasurer of the parent company was elected treasurer of the International Division. Eugene F. Kindler was elected assistant treasurer of the same division.

NATIONAL LEAD

George Diehlman has been appointed manager of the raw material sales for the Atlantic Branch. He was previously sales promotion manager for protective coating paints.

DELAWARE CHEMICALS

Herman A. Pfeifer has been appointed district sales manager for the metropolitan New York area. He is an honorary life member of the Philadelphia Paint and Varnish Production Club.

SELAS

Ernest S. Kopeki has been appointed manager of public relations and promotion. He is a member of American Society for Metals, American Society of Tool Engineers and the National Industrial Advertisers Association.

AMERICAN CYANAMID

Leonard E. Dupras has been named a New England sales representative of the pigments division, and will operate out of the Boston office.

STRESSEN-REUTER

R. Norman Haugen has become associated with the sales department. He was formerly with Alkydol Laboratories and T. F. Washburn Co.

AMERICAN ZINC

Howard Lee Young has been elected vice-president of American Zinc Sales Co., and American Zinc Oxide Co., both owned by American Zinc, Lead and Smelting Co.

SHIELD CHEMICAL

Dr. Emil A. Milost, research director, has been named vice-president and director; **Herbert E. Herrman** and **David Hilowitz** have been named as directors.

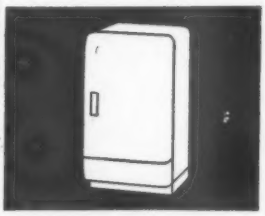
3 M

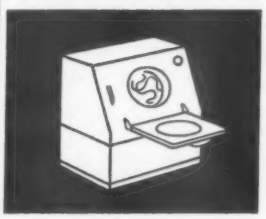
Edward R. Newcomb has been elected vice-president of export sales of the International division. His duties will include export sales to Japan. the Phillipines, South Africa and the South American countries.

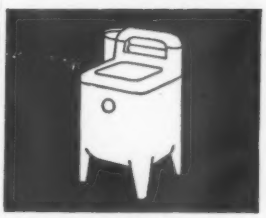
NJ ZINC

James P. Sheridan has been appointed manager pigment sales, western district, with headquarters in Chicago. He has been associated with the company for more than 31 years, the past 18 as sales representative in the pigment field. In 1945 he was Chairman of the Chicago Rubber Group, sponsored by the Rubber Division of the American Chemical Society, and is currently a member of the Executive Committee of the Chicago Paint, Varnish and Lacquer Association.

J. P. Sheridan







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CHEMICALS — PLASTICS
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Lasting high gloss... for home appliances

Have you tried Resimene 881 for your washer, refrigerator, other appliance finishes? Here are the advantages it delivers:

Resimene 881, a modified melamine formaldehyde resin, produces appliance coatings—especially *white* enamel finishes—with beautiful high gloss and exceptional durability. And in appliances, quality, appearance and performance like this pay off on the sales floor. Resimene 881 also

1. Improves adhesion and flexibility
2. Increases alkali resistance
3. Improves chalk resistance
4. Is compatible with a wide range of alkyd oil lengths and other film formers.

For full information on Resimene 881 for gleaming, longer-lasting appliance finishes, mail the handy coupon below. Resimene: Reg. U.S. Pat. Off.

MONSANTO CHEMICAL COMPANY, Plastics Division, Room 5006 Springfield 2, Mass.

☐ Please send me more information about Resimene 881 for appliance finishes.

☐ Also send information about Monsanto urea resins for appliance finishes.

Name & Title _____

Company _____

Address _____

City, Zone, State _____

SERVING INDUSTRY . . . WHICH SERVES MANKIND

Roy Wallace

John H. Drexler

GOODYEAR

Roy Wallace has been named manager of the central sales district chemical division with headquarters in Cleveland. **John H. Drexler** will serve there as a special sales representative.

INTERNATIONAL NICKEL

Frank L. LaQue has been elected vice-president and manager of the research and development division. He has been head of the corrosion engineering section of the development and research division since 1945.

NEWPORT

Ernest E. Holdman has been elected to vice-president in charge of export sales. **Richard J. Spitz** has been elected vice-president of domestic sales.

CONTINENTAL CAN

E. L. Hazard has been named general manager of the north-eastern district of the eastern metal division. He previously was manager of production of the Pacific division.

DEVOE & RAYNOLDS

J. Harold Kolseth has been elected executive vice-president, according to an announcement by W. C. Dabney, president. He had been vice-president in charge of all trade sales divisions, and continues as a director. He will devote himself to the company's overall paint, lacquer and varnish manufacturing and merchandising activities. During WW II he served on the War Production Board, and as an officer in the U. S. Navy. He resides in Plainfield, N. J., and is the father of two children.

J. Harold Kolseth

NAFTONE

James S. Martin, has become associated as sales manager of west coast operation, according to an announcement by H. M. Johnson, sales chief. He was a paint inspector for the U. S. Maritime Commission during the war, and later became associated with the pigment department of E. I. DuPont de Nemours-&-Co.,-on the west coast. He is a member of the Golden Gate Paint and Varnish Production Club, and the Golden Gate Paint, Varnish & Lacquer Association, for which he served as a member of the Executive Committee. He will make his headquarters in San Francisco.

James S. Martin

METALS DISINTEGRATING

Frederick S. Greenwald has been appointed supervisor of the customer service laboratory. He was previously associated with Glidden Co., Reading, Pa.; Wordway Paint Works, Chicago Heights, Ill., and in production control at the Brooklyn plant of Devoe & Raynolds. More recently he has been chief of customer service laboratory for Nuodex Products Co.

C. K. WILLIAMS

Forrest V. Alexander has been appointed sales representative in the Cincinnati area, with headquarters in the American Bldg. He is a graduate of Indiana University. After service in the army, he was connected with the Commercial Solvents Co. in its Cincinnati office.

GIVE ME A NAME ...

WIN 50 SILVER DOLLARS

WE HAVE A NEW BABY ON OUR ARMS THAT HAS SO MANY WONDERFUL PROPERTIES THAT WE DON'T KNOW WHAT TO NAME IT.

YOU DO IT FOR US AND WIN 50 SILVER DOLLARS.

Let us tell you something about it.

Chemically it is a highly polymerized organic ester. It is a powder that will not cause yellowing. It forms a colloidal gel so that it prevents the separation of one pigment from another and the pigment from the vehicle. As a result, we have found that it does the following:—

1. It acts as a bodying agent even for low alkyds, ureas, etc.
2. It is the best non-settling agent we have checked — at least twice as effective as aluminum stearate, far superior to Troykyd Anti-Settle — a processed bentonite, etc.
3. It prevents not only floating and silking but also flooding — the N. Y. Production Club could not find any additive that prevented flooding. There is no surface action of any kind — therefore no pinholing, frothing, etc.
4. It is an effective anti-sagging agent even for low pigmented alkyds.
5. It improves brushability.
6. It improves color uniformity and porous and non-porous surfaces.
7. 8, 9, 10, etc. — We don't have as yet, but will develop new uses.

We are temporarily calling it Compound XYZ. Give us your suggested name. If we use it we will send you 50 Silver Dollars.

My Suggested Name For Compound XYZ Is.....

.....

Please send me a Free sample so that I may check your claims ( ).

Name.....

Position.....

Company.....

Address.....

TROY CHEMICAL COMPANY

2589 Frisby Avenue · New York 61, N.Y.

Panels on Aerosols Featured at N. Y. Tech. Committee Meeting

A panel discussion on aerosol paints featured the June 17th meeting of Technical Committee of the New York Paint and Varnish Production Club, held at the Brass Rail.

Panel members included: Walter Beard of The Risdon Manufacturing Co., E. P. Stuart of Crown Can Div., Crown Cork & Seal Co., Inc., Herman Philips of the Hercules Powder Co., and F. S. Palmer, "Kinetic" Chemical Div., E. I. du Pont de Nemours & Co., and Carl Engelhardt, Brooklyn Paint and Varnish Co., Inc. Moderator for this panel meeting was George S. Cook of the Chemical Div., General Electric Co.

Mr. Cook opened the panel meeting with some interesting figures on the sale of aerosol paint products during 1953. According to a recent survey, he pointed out that 8,256,632 units of pigmented and metallic paints were sold last year and that a total of 2,360,433 units of clear plastic sprays were sold during the same period. Mr. Cook also mentioned that the pigmented products doubled in number during 1953.

Beard

Walter Beard discussed primarily the function of the aerosol valve, and some of the problems encountered with this particular valve.

The function of the aerosol valve consists of (1) Turn the spray on or off, (2) Assist in the development of aerosol particle size (50 microns), and (3) Control the delivery rate of the product.

Presently, the valves are made of Hycar, Teflon, Thiokol or soft Nylon. These materials must be solvent-resistant as possible; however valve manufacturers are seeking a more solvent-resistant elastomer than those mentioned above.

Clogging of the valves is due to: (1) poorly dispersed pigments, where particle sizes of 1/12,000 diameter will plug the small orifices, (2) presence of dirt, (3) sealing off of the valve due to the presence of oxidizing materials such as drying oils and alkyds.

Mr. Beard pointed out that valve manufacturers are in need of data showing the relation of such factors as orifice viscosity, quality of spray, etc. He also emphasized the importance of maintaining stable dispersions and the development of a solvent-resistant elastomer for valves.

Stuart

Aerosol paints are primarily a touch-up tool and are not suited for extensive area painting, according to E. P. Stuart.

Due to faulty packaging and claims by some of the early producers, aerosol paints were a disappointment to many users. However, Mr. Stuart emphasized that the services of a competent loader have materially helped in producing a first class product and recommended to those manufacturers contemplating the production of aerosol paints, at least in the beginning stages, have them packaged by those specializing in this service.

In discussing container design, of aerosols, he pointed out that there are three types now in use and these containers must stand 40 pound per square inch at 70 degrees F. and an instaneous pressure of 125 pound per square inch which are the limits set by the ICC regulations. Mention also was made of an aerosol dispenser with as small agitator ball, the purpose of which is to agitate the settled paint prior to use.

In order to avoid disappointments and hazards in the use of these products, Mr. Stuart urged that the label on the dispenser contain full instructions regarding proper application and a list of "don'ts" to avoid fires, etc.

Philips

Lacquers are the largest volume dispensed in the aerosol market. This is due to the fact that (1) nitrocellulose lacquers dry rapidly, (2) they have some excellent properties, (3) aerosol lacquers may have solids ranging from 12-18%, (4) wide variety of formulations possible with nitrocellulose, and (5) such lacquers have very little tendency to sag.

In elaborating on the properties of nitrocellulose lacquers in aerosol application, Mr. Philips indicated that

(*Turn to page 68*)

Performance proves...

TI-PURE® + selected extenders

ASSURE EXCELLENT COLOR UNIFORMITY FOR FLAT PAINTS...

over surfaces of varying porosity!

Your Du Pont White Pigments Salesman will be glad to give you complete information and technical assistance. Just call our nearest office or write to: Pigments Department, E. I. du Pont de Nemours & Co. (Inc.), Wilmington 98, Del.

® Reg. Trade-Mark for Du Pont Titanium Dioxide Pigments

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WHITE PIGMENTS

DU PONT
REG. U. S. PAT. OFF.
BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

PATENTS

Conducted by

Lancaster, Allwine & Rommel

PATENTS AND COPYRIGHTS

424 Bowen Building,
Washington, D. C.

Complete copies of any patents or trade-mark registration reported below may be obtained by sending 50c for each copy desired to Lancaster, Allwine & Rommel.

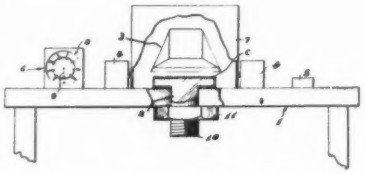
Fire-Retardant Coating

U. S. Patent 2,676,162. Ralph Marotta, Maiden, Mass., assignor to Monsanto Chemical Company, St. Louis, Mo., a corporation of Delaware.

A potentially intumescing fire retardant coating composition comprising (1) from 15 to 85% by weight of solids, said solids comprising from 50 to 90% by weight of (A) a mixture containing from 10 to 100% by weight of a film-forming condensation product of 4,4′ dihydroxy diphenyl dimethyl methane with epichlorohydrin and up to 90% by weight of a thermosetting resin selected from the group consisting of (*a*) heat-convertible phenol-formaldehyde resins, (*b*) heat-convertible resins of an aldehyde and a compound selected from the group consisting of urea, thiourea, guanidine, cyanamide, dicyandiamide and amino-triazines having at least two amino groups and (*c*) alkylated derivatives of the heat-convertible resins defined in (*b*), and (*B*) a water-insoluble reaction product of phosphoryl chloride and anhydrous ammonia, said last named reaction product and said mixture being present in said solids in a weight ratio of 1:1 to 1:5; and (2) from 85 to 15% by weight of an organic vehicle which includes an organic solvent for said first named condensation product and said thermosetting resin, said reaction product of phosphoryl chloride and anhydrous ammonia having a nitrogen-phosphorus atomic ratio within the range of 1.5:1 to 2.0:1.

Adhesion Tester

U. S. Patent 2,677,275. Sigmund S. Dabrowski, Summit, Illinois.



U. S. Patent No. 2,677,275

An electromagnetic method of testing the adhesive qualities of coating materials comprising the steps of adding iron powder to the coating materials, then applying the coating materials to a body and permitting the coating materials to dry, then fastening the body to make it immobile, next arranging an electromagnet contiguous to the coating materials, whereby the magneto-motive force of the electromagnet exerts a pulling force upon the iron powder in the coating materials, and measuring the current necessary to generate the magneto-motive force which pulls the coating material from said body as an index of the adhesive quality of the coatings.

Glyceride-Fumaric Acid Reaction Products

U. S. Patent 2,678,934. Oliver J. Grummitt, Cleveland, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio, a corporation of Ohio.

A process for effecting the condensation of a member of the class consisting of fumaric acid, fumaric acid anhydride, esters of fumaric acid, half esters of fumaric acid, salts of fumaric acid, salt esters of fumaric acid and amides of fumaric acid with an aliphatic, non-conjugated, poly-unsaturated fatty oil which comprises admixing a member of said class with an aliphatic, non-conjugated, poly-unsaturated fatty oil, introducing from 0.1% to about 2% by weight of the mixture of a free halogen, and heating the reaction mass to a temperature within the range of from about 175° C. to 300° C. until said class member has reacted.

Successful Coatings

This duck literally would be sunk if his coating were not waterproof. If it's water-proofness you are looking for in your coatings, as well as excellent resistance to acid and alkali, Neville Resins will fill the bill—adequately.

A smart duck we know has suggested the following formula for a highly successful exterior aluminum paint vehicle:

NEVILLE

GALLONS	POUNDS	
	100	R-12 NEVILLE RESIN
20	155	ALKALI REFINED LINSEED OIL
20	157	CHINA WOOD OIL
11.5	83	2-50-W HI-FLASH SOLVENT
51.5	329	MINERAL SPIRITS
	1.3	6% COBALT NAPHTHENATE
	825.3	

METHOD OF PREPARATION { Place both oils and 40 pounds R-12 Neville Resin in the kettle and heat to 545-550° F. and hold at this temperature for approximately 45 minutes. Check with remaining R-12 Neville Resin. Reduce. Finally add drier.

VEHICLE CONSTANTS {

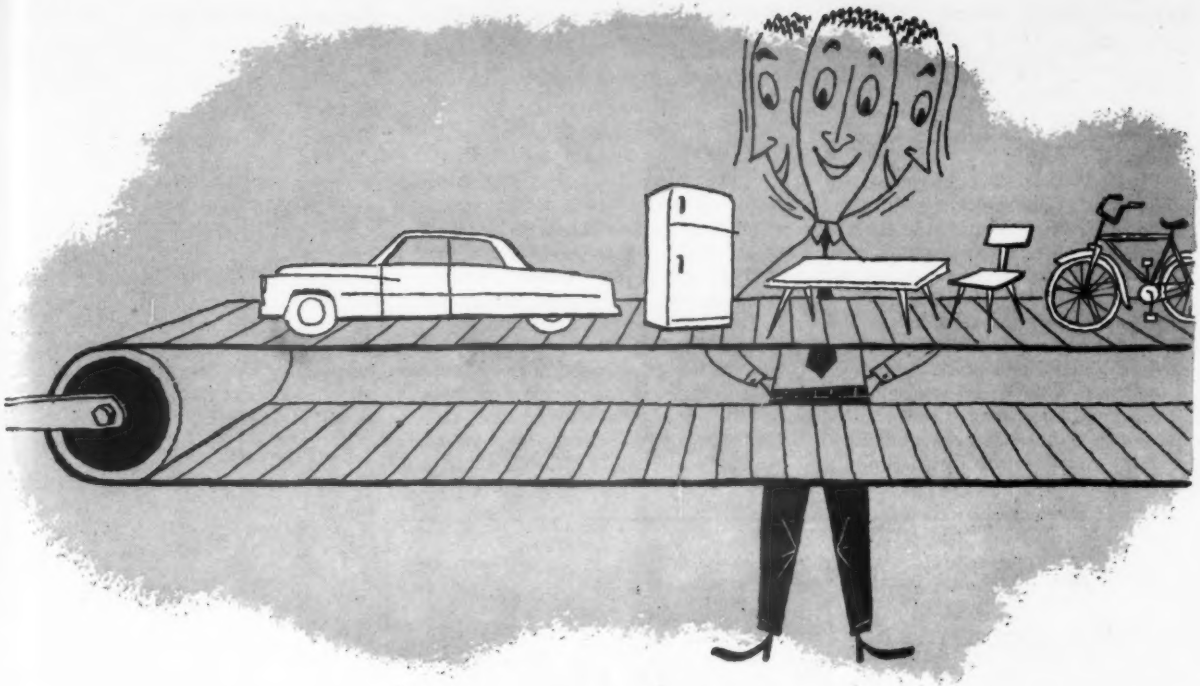
Solids	50%
Viscosity (Gardner)	B-C
Acid Number (on solids)	Less than 5

CALL ON US FOR SAMPLES (We think you will take to them like a duck to water.)

P-55

Plants at Neville Island, Pa., and Anaheim, Cal.

NEVILLE CHEMICAL CO.
PITTSBURGH 25, PA.



TITANOX®
IS PRODUCTION-LINE

White Magic

Be sure you use TITANOX white pigments in your production-line finishes, because only TITANOX assures you of getting the most out of magical titanium dioxide.

For industrial finishes, three rutile pigments stand out: TITANOX-RA, TITANOX-RA-50 and TITANOX-RA-NC. With these easy-mixing, easy-dispersing pigments you can obtain the exact qualities of brightness, whiteness, opacity, fade- and chalk-resistance you desire. For top-quality industrial finishes, use only top-quality TITANOX white pigments.

You can get more out of titanium dioxide, too, by using our Technical Service Department for help in your pigmentation problems. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; Atlanta 2; Boston 6; Chicago 3; Cleveland 15; Los Angeles 22; Philadelphia 3; Pittsburgh 12; Portland 9, Ore.; San Francisco 7. In Canada: Canadian Titanium Pigments Limited, Montreal 2; Toronto 1.

2301

® TITANOX
the brightest name in pigments

TITANIUM PIGMENT CORPORATION
Subsidiary of NATIONAL LEAD COMPANY

Ketone-Aldehyde Resins

U. S. Patent 2,674,591. Theodore White and Jeremy Ralph Barnes Hastings, London, England, assignors to The Forestal Land, Timber and Railways Company Limited, London, England, a British company.

Water-soluble resinous condensation products of at least one aldehyde of the formula RCHO, wherein R is selected from the group consisting of hydrogen and saturated and unsaturated aliphatic hydrocarbon groups containing from one to three carbon atoms and at least one ketone of the formula R′R″CO, wherein each of the substituents R′ and R″ is an alkyl group wherein R′ plus R″ is not more than four carbon atoms, containing at least one sulphonic acid group.

M'facture. of Waterproof Materials

U. S. Patent 2,677,658. Auguste Florentin Bidaud, Serezin-du-Rhone, France, assignor to Societe des Usines Chimiques Rhode-Poulene, Paris, France, a French body corporate.

Process for the production of waterproof products which comprises mixing a liquid polymer of an organo silicone wherein each organo group is a methyl radical with silicon dioxide, the latter being in the form of an empalpable powder and forming at least 25% by weight of the mixture, storing the mixture for a period of at least one week at room temperature and thereafter working the mixture until it is converted at least to the consistency of a smooth paste.

Resin Coated Pigment

U. S. Patent 2,674,587. Thomas Gostage Leek, New York, N. Y., assignor to Edgar Brothers Company, Metuchen, N. J., a corporation of New Jersey.

A pigment comprising discrete particles in solid state of clay individually coated with a condensation product of formaldehyde and at least one material of the group consisting of (*a*) urea, (*b*) phenol and (*c*) melamine, which condensation product is capable of further advancement, prepared by spray-drying an aqueous mixture of clay and one of the group consisting of (*i*) a water solution of said condensation product and (*ii*) a water dispersion of said condensation product.

Lead Pigment

U. S. Patent 2,677,621. William J. Clapson, Joplin, and Earl W. Amthauer, Carl Junction, Mo., assignors to The Eagle-Picher Company, Cincinnati, Ohio, a corporation of Ohio.

A pigment consisting essentially of lead and magnesium compounds in chemical association resulting from reaction of lead oxide and magnesium carbonate in the presence of water, the said pigment having a lead content of from approximately 20 to 70% by weight and being characterized by whiteness comparable to the whiteness of basic carbonate white lead, and a higher bulking value than basic carbonate white lead.

Aluminum-Resin Coating

U. S. Patent 2,675,363. Robert R. Howard, West Collingswood, and Harris M. Wilcox, Gibbsboro, N. J., assignors to R. M. Hollingshead Corporation, Camden, N. J., a corporation of New Jersey.

A liquid coating composition capable of providing a smooth metallic surface on drying and burnishing comprising in admixture a synthetic resin consisting of a tripolymer of vinyl chloride, vinyl acetate and maleic acid; finely divided, unpolished aluminum powder consisting of particles of aluminum coming within the size range from about 1 micron to about 44 microns; an aliphatic ketone base solvent for the resin and a relatively small amount of propylene oxide.

Organosilicon Coatings

U. S. Patent 2,679,496. Raymond H. Bunnell, Toledo, Ohio, assignor, by mesne assignments to Allied Chemical & Dye Corporation, New York, N. Y., a corporation of New York.

A composition that produces superior coatings upon hydrolysis, comprising (1) a silane whose molecule consists of a silicon atom to which are attached four monovalent radicals from one to two of which are ethyl and from two to three of which are hydrolyzable radicals; and (2) a silane whose molecule consists

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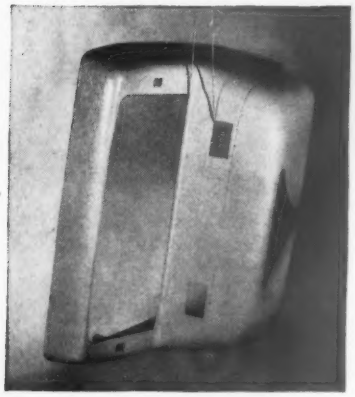
Lift trucks and other mechanical handling equipment, finished in safety-code yellow and black, benefit from lacquer's fast-drying, fast-taping qualities. Manufacturers and users alike find Hercules' new data on taping times interesting, useful, money-saving.



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New in the field of multicolor and textured lacquers is their adaptation to electrostatic spray machines, developed jointly with Ransburg. Are you up-to-date on this new area for the sale of money-making finishes?

FINGER-TIP BEAUTY

Subject of a paper given before Chemical Specialties Manufacturers' Association in May, new ethyl cellulose hair lacquers are easy to apply, easy to wash out, flexible, non-flaking.

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CL54-4

of a silicon atom to which are attached four monovalent radicals not more than one of which is an alkyl radical having from one to two carbon atoms; from two to three of which are hydrolyzable radicals; and one of which is a saturated cycloaliphatic hydrocarbon radical having a single nucleus containing from five to six carbon atoms each of which is connected to at least one hydrogen atom, having from five to eleven carbon atoms, and having not more than three side chains containing a total of no more than five carbon atoms, the molar ratio of (1) to (2) ranging from 2:3 to 9:1, and the ratio r/Si ranging from 1.1 to 1.7, wherein r is the total number of non-hydrolyzable radicals attached to silicon and Si is the total number of silicon atoms.

Waterproofing Compositions

U. S. Patent 2,679,491. Daniel W. Kennedy, Troy, and Frederick G. Weigand, Ballston Lake, N. Y., assignors to General Electric Company, a Corporation of New York.

A cement waterproofing composition comprising a 1 to 10 per cent solids organic solution of a compatible, cold-blendable mixture of non-interacted ingredients comprising (1) an organopolysiloxane resin in which the organic groups are selected from the class consisting of methyl, ethyl, phenyl radicals, and mixtures of such radicals attached to silicon by carbon-silicon linkages and obtained by hydrolyzing an organochlorosilane designed to give the above-mentioned organopolysiloxane with a mixture of ingredients consisting essentially of (*a*) water and (*b*) a liquid chlorinated hydrocarbon which is a solvent for both the organochlorosilane and the formed organopolysiloxane, said solvent having a specific gravity above 1.1 and a boiling point below 175° C. and being inert to any formed hydrogen chloride, to the aforesaid organochlorosilane and to the organopolysiloxane, and (2) an oil-modified alkyd resin, the said organopolysiloxane resin comprising, by weight, from 10 to 50 per cent of the total weight of the latter and the oil-modified alkyd resin.

Phenolic Resin

U. S. Patent 2,675,336. John T. Stephan, Seattle, Wash., assignor to Monsanto Chemical Company, St. Louis, Mo., a corporation of Delaware.

A water soluble phenolic resin comprising the reaction product of phenolic material containing a phenol having a distillation range between 180 and 220° C. and not containing more than about 15% of at least one phenol selected from the group consisting of ortho cresol, xylenol and mixtures thereof and an alkaline redwood bark extract powder, and aqueous formaldehyde in the presence of an alkali metal hydroxide.

Paint Can

U. S. Patent 2,677,459. Hyman Ritzenberg, Arlington, Va.

A sealed paint can having a cover and being partially filled with a paint vehicle, said cover being formed with a central depression and a concentric internally threaded central opening smaller in diameter than said depression, a pigment container partially threaded into said central opening, a rim on said pigment container equal in thickness to the depth of the cover depression, said pigment container being adapted to be manually turned into the screw threaded opening, and a cutting blade riveted to the underside of said cover and engaging the side of said pigment container during the threading operation to spirally cut said pigment container throughout its entire length to expose the entire contents of the pigment container to the paint vehicle, the rim of said pigment container being seated wholly within the cover depression when said pigment container is completely threaded into said opening, presenting a substantially smooth and level cover.

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•

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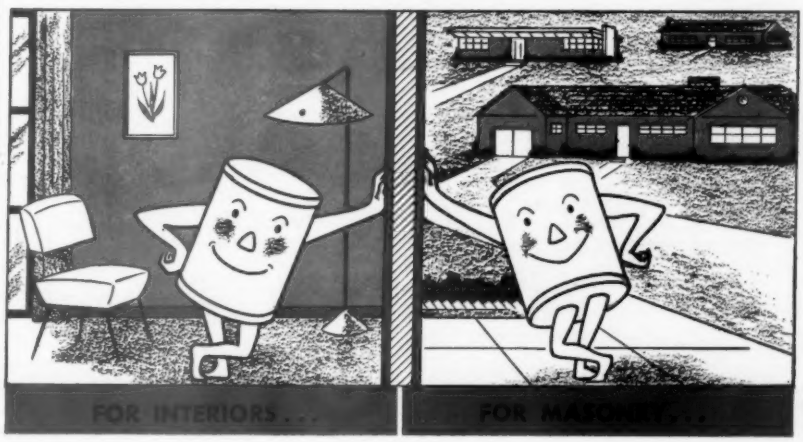

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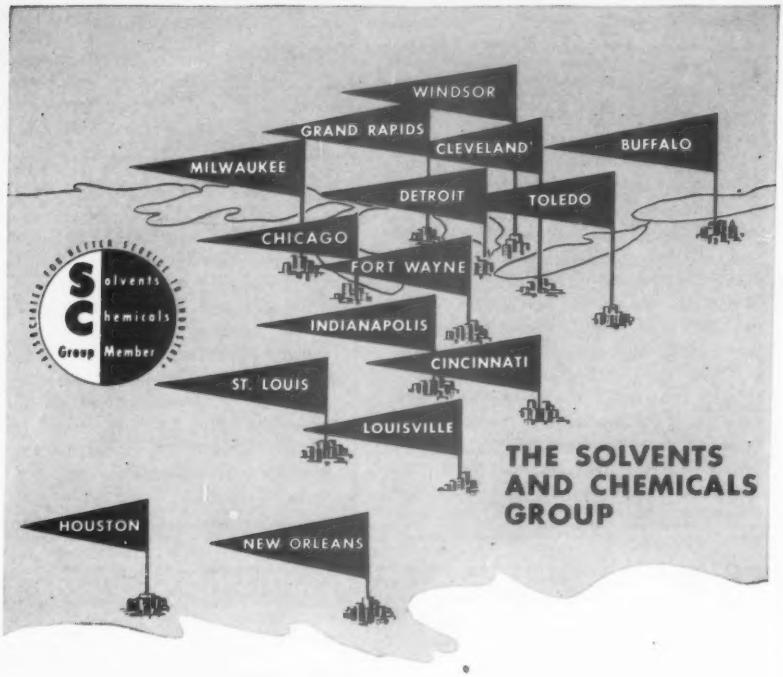

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GAS HEAT TREATMENT

(*From page 25*)

the product can be emptied directly into drums when the charge has been heated. With the old arrangement, it was necessary to pump the product from the potswith as portable electric pump. The pot, used for the normal type of pot furnace have a bottom dished 6″, which is flanged to the pit sides in order to permit replacement of the bottom of the pot when necessary, whereas with the immersion system, the design of the pot is simplified, and the heating tubes may be arranged nearer to the bottom of the pot.

Storage of Oil

The oil when received at the works of the varnish maker is pumped into large storage tanks which are normally erected outside the factory. During cold weather, great difficulty is experienced in pumping out the oil. If steam heated coils are used to keep the oil warm, it may be necessary at night to keep it in operation; a large boiler would normally be shut off at night. In order to overcome this difficulty, consideration is being given to the fixing of immersion tubes to these tanks. The burners would be arranged to give sufficient heat to keep the oil at approximately 40-50°F. Low pressure burners will be utilized and the control will be such as to prevent any possiblity of overheating the oil. This set-up is shown in Fig. 13. (See page 25).

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Soybean Associations To Meet Jointly in Memphis Aug. 31

The American Soybean Association and the National Soybean Processors Association will hold joint annual meetings in Memphis, Tenn., August 31 through September 2, the ASA has announced.

George M. Strayer, secretary-treasurer of the ASA group, noted that this is the first time the two groups will hold their annual meetings jointly, a step he characterized as "drawing the producer and processor associations closer together."

Program sessions will be devoted to utilization and processing, production, storage, handling and marketing.

PRODUCTION CLUBS

(*From page 35*)

port on the recent Council meeting in New York.

The Federation has granted $250 for the activities of our Educational Committee.

In commemoration of the 35th anniversary of the New England Club a yearbook is to be prepared under the direction of John Kaheny.

Mr. Robert D. Fremden of the Goodyear Tire and Rubber Company began his talk with a discussion of the properties of masonry and the place of styrene-butadiene copolymers in the masonry coatings field. A recent survey determined the present market for such paints. From an analysis of future housing requirements and the trends in construction materials, the exterior masonry paint potential was projected to 1975. The speaker then covered the formulation, production, and durability of paints based on Pliolite S-5. Colored slides illustrated the use of colored finishes on substrates of varying porosities.

CDIC

The 340th meeting of the CDIC Club was called to order by president Ziegler at the Alms Hotel on Monday, May 10 with fifty-one members and guests in attendance. Among those in attendance were Wells Ginn and Paul Marling, club honorary members.

The Technical Committee, as reported by Carl Opp, gave a progress report on the Club Paper "Low Odor Coatings". He also reported on a letter sent to Dr. Moore of the Federation Research Committee, outlining the Club's Technical program for the next four years.

The report of the "Standards and Methods of Test" Committee was presented by Arthur Sill in B. Brand's absence. The report was approved when voted upon.

Bill Kentner, reporting as Council representative, gave a very enlightening though lengthy discourse of what transpired at the spring meeting. He discussed the workings and functions of the Executive Committee, Board of Directors, and Federation Council and the policies of each group. He commented on the methods used by other Clubs in sending representatives to Council meetings and how some of these methods weakened the club's standing. Bill received a good ovation on the completion of his report.

Wally then introduced Harry Burrel who asked for a show of hands as to what members would be interested in a "High Polymer Chemistry" Course at U. C. Night School. The response was unimpressive.

Officers for the year 1954-1955 are as follows:

President: Robert Lipp, Moran Paint Co.

Vice President: William L. Foy, Foy Paint Co.

Secretary: Carl J. Opp, Interchemical Corp.

Treasurer: Chester Olsen, Hanna Paint Co.

Bob Lipp, the Program Chairman, then turned the meeting over to Bill Kentner and George Schutte.

John Holle of the Interchemical Corp. discussed the methods used by them in the selection and training of tinters. After numerous questions Fred Hanowich discussed the methods used by Hanna Paint and this too caused much discussion.

DeVilbiss Co. Announces Two Inventions

Two new inventions for automatic spray coating machines have been announced by the DeVilbiss Company, Toledo, Ohio. The inventions were developed by D. J. Peeps, engineering vice president, and assigned to the company.

One invention is said to aid in maintenance of high production by moving spray guns in synchronization with an article being sprayed and returning the guns to a starting position so another article can be sprayed in the same manner.

The other invention is a pneumatically-operated device which actuates spray guns when an article is on the conveyor-supports of the automatic machine and shuts them off when the support is empty.

SHAWINIGAN

vinyletter no.1

Helpful Technical and Marketing Data on Polyvinyl Acetate Emulsions and Paints

why ask Shawinigan: Successful sales record of polyvinyl acetate emulsion paints based on Shawinigan's GELVA Emulsion TS-22 has paint industry curious about this supplier. Typical questions: What do they know about PVAc paints? What's their background in polyvinyl acetate emulsions?

here are answers: Shawinigan is best informed resin manufacturer in U. S. and Canada on PVAc emulsion paints. Company is one of country's largest producers of PVAc resins — now used mostly in adhesives, textiles. Research experience dates back 25 years to commercial introduction of GELVA polyvinyl acetate resins by Canadian associate, Shawinigan Chemicals Ltd.

research on PVAc paints: Domestic affiliate, Shawinigan Resins Corporation, manufactures modern GELVA Emulsions. These in turn are sold in U. S. by associated company, Shawinigan Products Corporation, a sales and research organization. Latter's research since 1942 devoted specifically to PVAc paint formulating, testing, production. Result — First large scale production of PVAc paints in U. S. was based on GELVA TS-22, drew heavily on Shawinigan research.

knowledge at your service: Shawinigan offers data on pigmentation, paintability, stability, durability of GELVA Emulsion paints based on over five years' successful commercial exposure. Also offers samples of GELVA TS-22, suggested interior or exterior formulae, other pertinent literature. Send coupon.

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Panel on Aerosols

(*From page 61*)

since nitrocellulose lacquers dry rapidly they are ideal for touch-up and refinishing small objects.

In comparing aerosol-applied lacquers with cold-spray lacquers, it was pointed out that the lacquer particles of the aerosol type are 100-200 microns in diameter, whereas the cold-spray particles are less than 100 microns. This means that the cold-spray application will have a slightly smoother appearance than an aerosol-applied lacquer.

Clogging in aerosol lacquer application is primarily due to intermittent spraying.

Palmer

F. S. Palmer dealt with aerosol coating formulations. There are many and varied problems connected with preparation of an aerosol coating. These include, type of propellent, compatibility of propellent with other ingredients, pressure and consistency, mechanical problems such as valve design, redispersion of settled pigments, etc. All of these factors determine the quality of the spray obtained in aerosol application.

The propellents used in the aerosol formulations are in a liquid state and are also miscible with the solvents used in the formulation. The effect of this situation is that the propellents act as diluents. This is one of the formulation problems found in aerosol coatings. Another problem is concerned with thinning the paint sufficiently so that they can be sprayed at aerosol pressures.

With regard to solids content of different aerosol compositions, Mr. Palmer presented the following figures:

Alkyds	18-22%
Nitrocellulose	10-15%
Acrylics	8-10%
Vinyls	5-10%

Film defects such as sagging, gloss, blushing, orange-peel, may be more exaggerated due to the presence of the propellent and low boiling solvents. This is particularly true in the blushing of lacquers. Misting can be improved by lowering the pressure and increasing the viscosity. The design of the valve also may have an influence on the amount of misting that may occur during application.

Engelhardt

Carl Engelhardt presented his impression of aerosol coatings from a manufacturer's point of view. Such problems as low viscosity, high solids content, compatibility, dispersion and suspension of the pigments were encountered in an alkyd enamel formulation.

In the filling operation, where temperatures of 10 deg. F. were employed, Mr. Engelhardt found the problems relating to viscosity and "kick out" of the resin component became more pronounced.

He was in agreement with Mr. Palmer that the techniques of formulating such coatings were quite involved and no hard and fast rule could be applied.

•

Reichhold Names Withington Co. As N. Y. Sales Representatives

In order to augment their present technical and sales service staff Reichhold Chemicals, Inc., White Plains, N.Y., has appointed C. Withington Co., Long Island City, N.Y. as sales representatives for synthetic resins to a portion of the paint, varnish and lacquer industry in the metropolitan New New York area.

Chandler Withington

The Withington Co. is composed of a staff of sales personnel experienced in the trade, and maintains a technical laboratory for the solution of sales service problems.

•

Paint & Chemical Div. of UJA Ahead in Funds Campaign

The Paint and Chemical Division of the United Jewish Appeal has over $300,000 pledged towards its 1954 fund campaign, according to the division chairman, Robert Wishnick, Witco Chemical Co.

Mr. Wishnick made the announcement that the division's campaign is well ahead of the 1953 drive at the same time last year at a May meeting.

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CALENDAR OF EVENTS

Aug. 30-Sept. 1. 34th Convention of American Soybean Assoc. Hotel Peabody, Memphis, Tenn.

Sept. 12-17. ASC meeting, Div. of Paint, Plastics, and Printing Ink Chemistry, New York City.

Oct. 11-13. American Oil Chemists' Society, Hotel Radisson, Minneapolis, Minn.

Nov. 15-17. 66th Annual Convention, National Paint, Varnish, and Lacquer Assoc., Palmer House, Chicago.

Nov. 18-20. 32nd Annual Meeting of Federation of Paint and Varnish Production Clubs, and 19th Paint Industries' Show, Palmer House, Chicago.

Production Club Meetings

Baltimore, 2nd Friday, Park Plaza Hotel.

Chicago, 1st Monday, Furniture Mart.

C.D.I.C., 2nd Monday.
Cincinnati — Oct., Dec., Mar., May, Hotel Alms.
Dayton — Nov., Feb., April, Suttmillers.
Indianapolis — Sept., Claypoll Hotel.
Columbus — Jan., June, Fort Hayes Hotel.

Cleveland, 3rd Friday, Harvey Restaurant.

Dallas, 2nd Thursday, No Fixed Place.

Detroit, 4th Tuesday, Rackham Building.

Golden Gate, Last Monday, E. Jardin Restaurant, San Francisco.

Houston, 2nd Tuesday, Seven Seas Restaurant.

Kansas City, 2nd Wednesday, Pickwick Hotel.

Los Angeles, 2nd Wednesday, Scully's Cafe.

Louisville, 3rd Wednesday, Seelbach Hotel.

Montreal, 1st Wednesday, Queen's Hotel.

New England, 3rd Thursday, Puritan Hotel, Boston.

New York, 1st Thursday, Brass Rail, 100 Park Ave.

Northwestern, 1st Friday, St. Paul Town and Country Club.

Pacific Northwest, Annual Meetings only.

Philadelphia, 3rd Wednesday, Engineer's Club.

Pittsburgh, 1st Monday, Fort Pitt Hotel.

St. Louis, 3rd Tuesday, Forest Park Hotel.

Southern, Annual Meetings Only.

Toronto, 3rd Monday, Diana Sweets, Ltd.

Western New York, 1st Monday, 40-8 Club, Buffalo.

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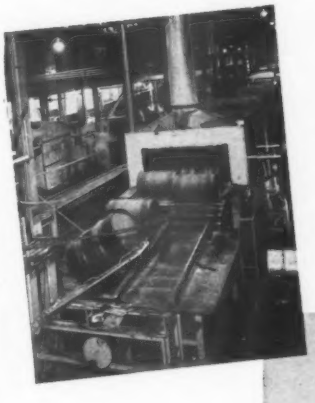

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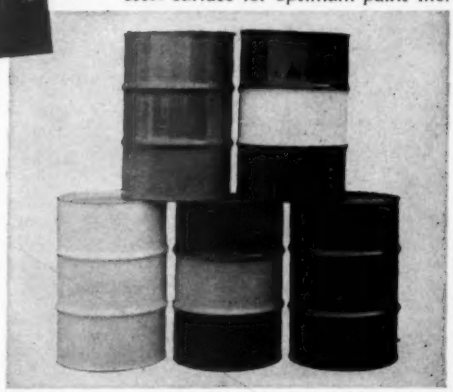

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abstracts

Anomalous Flow Behavior Of Dispersions

R. R. Myers, A. C. Zettlemoyer, National Printing Ink Research Institute, Lehigh University, Bethlehem, Pa. Presented before ACS Meeting, Div. of Paint, Plastics, and Printing Ink Chemistry, Kansas City, Mo., March 24-27, 1954.

The role of theoretical rheology in placing the technology of dispersions on a sound scientific basis has not kept pace with the numerous applications and needs of rheological measurements in industry. The flow behavior of printing inks and other dispersions has been cited as an example of a field in which the art is far ahead of the science, and two approaches have been discussed whereby the gap between theory and practice can be narrowed. The first of these approaches is the purely viscometric one in which data at low and high shear rates are used to identify the types of anomalies; the second is the isolation of the elastic component believed responsible for the anomalies.

Benefits which may accrue from the proper interpretation of viscometric data are discussed in the light of the criteria which may be used in the delineation of the nature and range of the forces emanating from the particle surface. The present status of viscometric theory has been summarized.

The possibility of attributing anomalies to an elastic component of the flowing system has been examined with the conclusion that at least three material constants are necessary in order to characterize non-Newtonians completely. Characterization of non-Newtonian systems by isolation of the elastic and viscous components and their direct measurement by independent means has been postulated to be the most logical approach to an understanding and characterization of industrial dispersions.

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Rheology of Printing Inks

C. T. Dickert, R. R. Myers, National Printing Ink Research Institute, Lehigh University, Bethlehem, Pa. Presented before ACS Meeting, Div. of Paint, Plastics, and Printing Ink Chemistry, Kansas City, Mo., March 24-27, 1954.

The trapping of several series of commercial and special inks has been compared with measurements on two currently used control instruments, a precision rotational viscometer and a tack-measuring device named the Inkometer.

Correlations between tack reading and trapping sequence were obtained with simple dispersions of printing ink consistency, but rotational viscometry did not provide a satisfactory correlation. With the more complex commercial inks a strict dependence of trapping tendency on readings with either instrument did not exist.

Microscopic investigation of the prints showed that trapping is not a question to which a clear-cut answer exists; instead, film splitting was observed to occur partly within the previously printed film and partly within the film being applied. This observation has been used to explain the irregularities in the correlation between Inkometer reading and trapping sequence which occurred with inks of closely spaced tack values.

Trapping sequences have been correlated with the maximum velocity at which inks can be printed without picking. A preliminary evaluation of the Hercules print tester has indicated that the picking of paper is a useful criterion of the tack of an ink, and therefore of its trapping ability.

Methods for Determining Elasticity of Coatings

Presented at Second Congress of FATIPEC, May 18-23, 1953, Noordwijk aan Zee, Holland.

The present investigation of methods for determining elasticity has shown that the Erichsen apparatus is very suitable for testing clear and pigmented nitrocellulose lacquers, if the films are applied to metal panels of identical material and thickness, and if the thickness of the films investigated are equal.

In as much as all the oleoresinous varnishes tested show either very low or fairly high, but no intermediate Erichsen values, the Erichsen apparatus seems inadequate for elasticity determinations for this type of protective coatings.

The kauri reduction test is very well suited for determining the elasticity of oleoresinous varnishes, but the necessity of preparing several mixtures of the varnish with the run kauri solution makes it more time consuming than the Erichsen test and the British standard method.

The British standard method is easily carried out, but does not allow for the differentiating made possible by the kauri reduction method.

The investigation indicates that in order to pass the British standard test for elasticity an interior varnish must have a kauri reduction value of approximately 10% kauri or higher, and that oleoresinous varnishes with kauri reduction values higher than "20% oil" will show fairly high Erichsen values.

Hardness Determinations With Sward Rocker

Presented at Second Congress of FATIPEC, May 18-23, 1953, Noordwijk aan Zee, Holland.

Reproducible hardness values for protective coatings films can be obtained with the Sward hardness rocker if the measurements are carried out, on a film free from impurities and if the temperature and relative humidity are kept constant during the determinations.

The hardness values obtained vary considerably when different rockers are used, even though these have been calibrated on the same plate glass panel. This variance makes questionable the use of the Sward hardness rocker in standard methods for testing the hardness of protective coatings.

In comparing the hardness of different films it is essential that they are applied in the same thickness, since the hardness values vary appreciably with the thickness of the film.

When applied in a thickness of 20, most of the oleoresinous varnishes tested reached a constant hardness

Chats about Finishes

WHAT CAN ROSIN AMINES DO FOR YOU?

by

EMILE PRAGOFF, JR.

Sales Mgr., Rosin & Derivatives
Hercules Naval Stores Dept.

Hercules Rosin Amine D and its derivatives may offer you opportunities to improve the production and performance of your finishes.

Rosin Amine D, a high molecular weight primary amine, and its derivatives are surface active compounds compatible with a wide variety of film formers and soluble in all common solvents. By reaction with carboxylic acids, this amine forms wax-like salts and resinous amides. It reacts with metal salts to form resinous metal complexes.

The wide range of physical and chemical properties of Rosin Amine D and its derivatives is demonstrated by use in pigment flushing, corrosion inhibiting protective coatings, wetting agents, dispersing agents, adhesion promoters, viscosity regulators, preservatives, emulsifiers, and gel dispersing agents.

Perhaps the interesting properties of this versatile new amine family suggest other uses of value in your own operation. We'd be glad to cooperate with you in developing them.

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1054-4

value after drying for approximately three weeks at 20°C and 60% relative humidity.

Vaught Penetrometer, Its Results and Significance

Presented at Second Congress of FATIPEC, May 18-23, 1953, Noordwijk aan Zee, Holland.

In order to develop physical examination methods for determing certain qualities of paint films, which practice asks for, different procedures are possible. We have divided these procedures more or less arbitrarily into pure empirical, deductive and inductive ones. In developing and applicating the Indentation Meter for paint an inductive method has been used, i.e. we do not start at the paint film, but we set up a physical examination method, which is as well defined and reproducible in itself as possible, and then we determine empirically the correlation with practice.—The Indentation Meter is related to the Vickers Hardness Tester for metals. We determine the resistance against indentation of a paint film from the displacement of a sapphire shaped like a Vickers pyramid, under the influence of a distinct force of 1—10 grams acting during 30 seconds. This displacement is, when a force of 10g is applied for 'finger nail resistant' paints, 8 microns or less. By electrical capacitive zero method the accuracy acquired is to within 0.1, as an indicating instrument serves a Wheatstone bridge for alternating current ('Philoscope'). The indentation is not proportional with the square root of the applied force but somewhat greater.

Different influences as temperature, layer thickness, formulation, weathering are discussed as well as the theory and the experiments of Brunt.

We tried to appreciate the results with regard to their correlation with the practice in accordance with the object of this Congress.

Physical Basis for Studying Properties of Lacquer Films

Presented at Second Congress of FATIPEC, May 18-23, 1953, Noordwijk aan Zee, Holland.

The cracking of a paintlayer during weathering is discussed. The main questions of the problem are on the one hand the exact definition of the mechanical behaviour of the paintlayer and on the other an analysis of the deformations during weathering.

The exact definition of the mechanical behaviour for small deformations is possible by means of the theory of retarded elasticity. The most simple retarded element is a combination of a spring and a dashpot, coupled in series or parallel and characterized by an elastic compliance and a retardation-time. Now a visco-elastic material, like paint, can be represented by an infinite series of such retarded elements and the relation between stress and strain for small deformations can be described by the elastic compliances as a function of the retardation-time.

Fracture is a much more complicated case. In the first place there are mathematical difficulties in the description of this discontinuous phenomenon and moreover an experimental one, arising from the statistical distribution of microscopical irregularities and defects in the structure of the material, which are the starting points for a fracture.

The forced deformations of a paintlayer during weathering result from thermal expansions and contractions and from changes in the humidity. A physically correct description of the mechanical behaviour and an exact analysis of the weathering conditions present the possibility for a better understanding of the failure during outdoor exposures of paint.

Drying and Ageing of Paint Films

Presented at Second Congress of FATIPEC, May 18-23, 1953, Noordwijk aan Zee, Holland.

During the process of drying and ageing, paint and varnish films undergo a contraction in volume which, under certain conditions, causes a mechanical stress in the film and its destruction through cracking and peeling off.

In the case of various varnishes, these contractions were examined by means of an optical testing method. The method consists in measuring the double refraction in sample films specially produced for this purpose, and enables the varnish chemist to get a direct proof of the shrinkage stress resulting in the film from the drying and ageing processes.

In the case of nitrocellulose lacquers, the development of shrinkage stress depends on the use of plasticizers and resins which, according to their specific nature, have very different influences. The examination of the shrinking process can, therefore, be a valuable help in making out the efficiency and situability of a plasticizer.

Examinations of this kind can also be applied to other varnishes and allow a conclusion as to their mechanical behaviour and durability. Cold-setting varnishes, e.g. those based on phenolic or urea resins, which during the ageing process show distinct shrinkage stress, are rather inclined to form cracks when practically applied to wood. The behaviour of the films also depends on other mechanical properties and is especially influenced by hardness and brittleness.

Comparing Hardness of Varnish Films by Various Test Methods

Presented at Second Congress of FATIPEC, May 18-23, 1953, Noordwijk aan Zee, Holland.

In a joint investigation by three laboratories five methods to determine the hardness of paint films were compared. Three finishes of varying hardness, all based on epoxy resins, were subjected to the methods in each of the three laboratories.

The two scratch test methods employed in this investigation, viz. the British Air Ministry scratch tester and the Dantuma scratch tester seem to be the most satisfactory, both on practical grounds and because of their repeatability. The results are affected, however, by the film thickness and also by the substrate.

For the pencil hardness and Sward Rocker methods no satisfactory correlation with the other methods could be established.

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TECHNICAL Bulletins

LIFT TRUCK

A side-loading lift truck reportedly designed for handling long, bulky loads is described in an illustrated eight-page bulletin published by the Baker-Raulung Co.

Complete dimensions and specifications are given for two models of the "Traveloader," one of 10,000 lb. capacity, the other of 30,000 lb. capacity. Space requirements are also described in photographs and diagrams, as well as various attachments for over-road deliveries, self loading, fork lifts, master pallets and pipe, ram, and sling-handling applications.

The bulletin is available from the company at 1230 West 80th Street, Cleveland 2, Ohio.

BOX STITCHING

Chart explaining and illustrating maintenance procedures for box stitching machines developed by Acme Steel Co. shows how to keep machines properly adjusted and track down causes of faulty stitches.

A perfect stitch is pictured on the chart, together with a trouble-shooter's guide to improperly formed stitches. The chart is printed on heavy stock with a plastic coating. Available from the company at 2840 Archer Ave., Chicago 8, Ill.

LABORATORY SERVICES

Eight-page illustrated folder offered by Deuber Laboratories, 114 East 32nd Street, New York, N. Y., describes types of laboratory services available from this independent service organization.

Some of the products tested include paints, varnishes, pipe coatings, roofing and plastics. Products are tested for corrosion, soil performance, fungus-proofing, etc. Organization also offers consulting services, product certification against quality standards and photographic facilities for illustrating test and research work.

MANUAL HANDLING

More than 40 different units of manual handling equipment are described in an illustrated pocket-size catalog available from the Kennett Equipment & Machinery Co., Kennett Square, Penna.

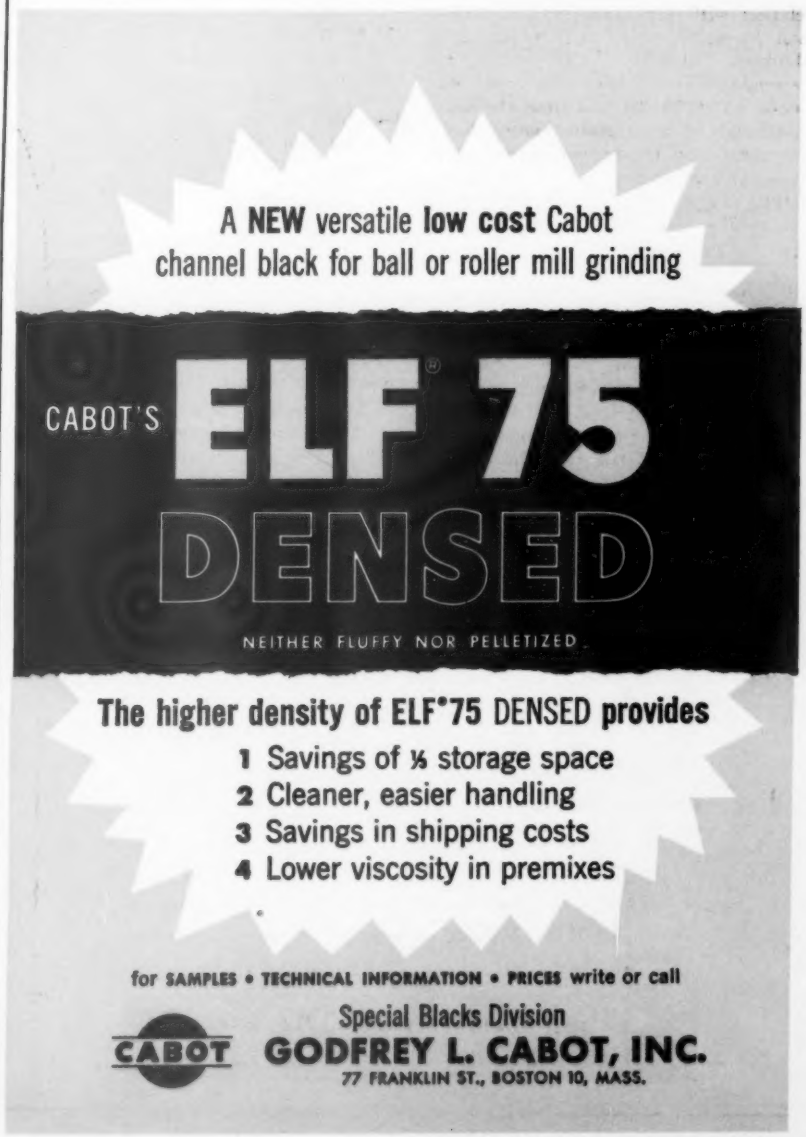
Catalog details such products as pin trucks, dye house trucks, conditioning trucks, platform trucks, dolly trucks, and other examples of trucks, racks and containers. One section is also devoted to the company's new caster for use under continuous wet conditions.

STYRENE-BUTADIENE

Uses and characteristics of styrene-butadiene latices, offered in five different copolymer ratios, are described in an 11-page technical bulletin, C-4-191, published by the Chemical Division of Koppers Company, Inc., Koppers Building, Pittsburgh 19, Pa.

A detailed description of each of the 15 different styrene-butadiene latices available is given in the bulletin. It discusses characteristics of color, solids content, mechanical stability, shelf life, odor, and dilutibility with water.

Also listed are suggestions and directions for use of the latices as pigment binders for clap-coated papers and clear paper coatings; in the production of grease-resistant paper and paper board; in sealer coats on felt base used in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floor coverings; in the finishing of textiles; and in rug-backing compounds.

ACETONITRILE

New 8-page technical bulletin on acetonitrile has been published by Carbide and Carbon Chemicals Co., a Division of Union Carbide and Carbon Corp. Acetonitrile is used in processing fats and oils, preparing surface coatings and as a solvent, crystallizing agent, and chemical reactant.

Bulletin lists this chemical's properties, constant-boiling mixtures, solubility for various materials, its uses and suggested applications.

Available from the company at 30 East 42nd Street, New York, N. Y., bulletin is numbered F-7501.

CHEMICAL INTERMEDIATE

Ethanolamines are described in a new technical handbook, "Ethanolamines—Monoethanolamine Diethanolamine, Triethanolamine," prepared by the Dow Chemical Company.

The booklet lists physical properties and the more common chemical reactions these products will undergo. It mentions some of their uses in products such as emulsion paints, corrosion inhibitors and dispersing agents, and discusses precautions for handling ethanolamines. Booklet is available from Dow's Organic Chemicals Sales Division, Midland, Michigan.

PIGMENT INTERMEDIATE

New technical information sheet on acetoacetarylamides has been issued by Carbide and Carbon Chemicals Co. Division of Union Carbide and Carbon Corporation. Physical and chemical properties, applications, and shipping information are given. Included are samples of typical Hansa yellows produced by coupling with various diazo compounds, and typical reactions as chemical intermediates.

Called Form 8259, bulletin may be obtained from the company at 30 West 42nd Street, New York 17, N. Y.

LABORATORY SERVICES

A new bulletin (No. 2) just published by Crippen & Erlich Laboratories, Inc., describes services offered on paints, varnishes, lacquers and plastics, together with sample price lists for analyses.

Listed are analyses of physical properties such as dilution stability, blush resistance and viscosity; chemical properties such as phenolic, glycerol, moisture, and styrene contents; permanence properties such as abrasion resistance and weathering properties; and toxicity tests.

Available from the company at 1138 East North Ave., Baltimore 2, Md.

TACKIFIER

A technical brochure on Koresin, a tertiary butyl phenolacetylene condensation product, is offered by Antara Chemicals, a sales division of General Aniline & Film Corporation, 435 Hudson St., New York 14, N. Y.

The booklet describes the physical properties, solubility and compatibility of Koresin and lists suggested uses such as in lacquer and varnish resin and as an intermediate for surface active agents.

PE

Bulletin offered by Celanese Corp. of America tabulates typical analysis, physical properties and applications of company's brand of Pentaerythritol, together with details of methods of analysis and tests used to determine properties.

Also summarized are tests comparing production of alkyd resin with company's brand of PE and two technical grades; formulation adjustments for hydroxyl content; procedures for use in production of long and medium oil alkyd resins, pentaerythritol-glycol formulations, and others.

Copies are available from company's Chemical Division, 180 Madison Ave., N. Y. 16, N. Y.

EXTENDERS

The use of precipitated calcium carbonates as inert fillers, or extenders, in polyester resins used for molding or casting products is detailed in Technical Service Bulletin W-1 published by Witco Chemical Co., 260 Madison Ave., N. Y. 16, N. Y.

Four-page bulletin claims that addition of such chemicals as the Witcarbs R, P, and V can extend resin as much as 50 per cent without detracting from final cured properties. Bulletin gives particle size, physical characteristics and costs for extenders, as well as specifications and evaluations for settling and viscosity.

HYDRAULIC HOISTS

A Hoist Classification Chart published by the Hydraulic Hoist and Steel Dump Body Mfrs. Association places all hoists in classes depending on the torque rating in inch-pounds developed around the hoist's hinge shaft. Also included is a table for determining the size or rating of hoist needed for anticipated uses. Body dimensions and payload tonnage figures are used in the table which converts that information into the required hoist class needed for a given job.

Copies are available from the Association at 1740 "K" St., N. W., Washington 6, D. C.

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INDUSTRIAL FILTERS

A new catalog describing its full line of industrial filters has been published by The Cuno Engineering Corp., Meriden, Conn. Engineering principles, construction and suggested types are described, together with specifications and capacities for all standard models having flow rates between 1 and 3760 gpm and normal operating pressures of 125 psi. Applications and case studies of actual operations are also covered in this catalog, no. AK-050.

FORK TRUCK HANDLING

Higher stacking for increased utilization of warehouse and factory floor space creates a problem in the stability of fork trucks moving loads vertically to great heights. This problem is the subject of a reprint, "The Relationship of Fork Truck Stability To High Stacking," published by Mercury Mfg. Co., 4044 South Halsted Street, Chicago 9, Illinois. Presented are the engineering considerations in the ability of fork trucks to handle high stacking.

TEMPERATURE CONTROL

Bulletin 103 published by the Burling Instrument Co., 16 River Road, Chatham, N. J., is third in a series describing company's line of temperature controls. Covered are models B-1C and B-1X, used for controlling temperatures, or as high- or low- temperature safety alarms, and cut-outs up to 1,000°F. Included are complete descriptions of operation, dimensions, methods of mounting, and operating specifications.

VEHICLE

Technical Bulletin No. 101 offered by Alfred Hague & Co., 227 34th St., Brooklyn 22, N. Y., describes the company's water-thinnable emulsion of chlorinated rubber for use as a vehicle in coatings. Listed are chemical and physical properties of the compound, called "Rubalt PE-16 Clear", together with examples of pigments found suitable for use with the vehicle, and suggested formulations for sample masonry paints.

Clarence W. Clark, Federation Treasurer-Emeritus, Dies

Clarence W. Clark, Treasurer-Emeritus of the Federation of Paint and Varnish Production Clubs, died of a heart attack at his home in Hampton, N. H., on June 14, 1954.

Mr. Clark, who retired from E. I. duPont de Nemours & Co. in 1951, served as Treasurer of the Federation for 10 years. At the time of his retirement the Federation unanimously elected him an Honorary Member.

He was graduated from Massachusetts Institute of Technology as a Chemical Engineer in 1908. He entered the employ of the duPont organization in 1923 and worked successively at duPont plants in Everett, Mass.; Wilmington, Del.; Fort Madison, Iowa; and Chicago, Ill.

CLASSIFIED ADVERTISEMENTS

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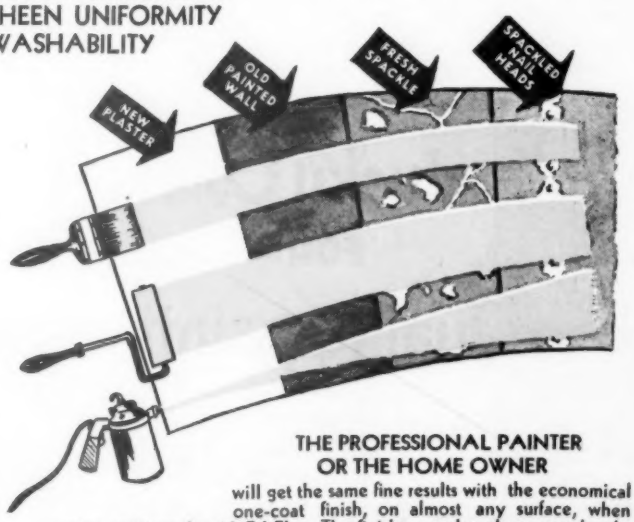

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